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CHARLES E. KELLOGG

TABLE OF CONTENTS

Introduction	GENEVA JOURNAL	1
Washington	As a member of the U. S. Delegation to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (UNCSAT) and for a side trip to the University of Ghent.	2
Session on Soil Science and Soil Survey		9
Session on Agricultural Problems of Regions of Low Rainfall and of Areas of Shifting Cultivation		15
Trip with van Tree Thailand and Sengrai		19
Session on Simple Methods of Determining Fertilizer Requirements in Tropics	Charles E. Kellogg	23
Trip to Belgium for D. Sc.		29
Session on Conservation		33
Session on Agrarian Structures and Land Settlement		40
Session on Agricultural Extension		42
Final Session		44
Geneva to Washington		47

TABLE OF CONTENTS

Introduction -----	I
Washington to Geneva -----	1
Conference opens -----	4
Plenary Session on Agriculture -----	6
Session on Irrigation -----	8
Session on Soil Science and Soil Surveys -----	9
Session on Agricultural Problems of Regions of Low Rainfall and of those of Shifting Cultivation -----	15
Tea with men from Thailand and Senegal -----	19
Session on Simple Methods of Determining Fertilizer Requirements in Tropical Countries -----	28
To Belgium for D. Sc. -----	32
Session on Conservation -----	38
Session on Agrarian Structures and Land Settlement -----	40
Session on Agricultural Extension -----	42
Final Session -----	44
Geneva to Washington -----	47

GENEVA JOURNAL

Introduction

I first heard of this Conference the week of Thanksgiving 1961. I was asked for suggestions and urged that invitations for papers be extended only to those who had been highly successful in extending technical assistance in one or more underdeveloped countries. (This suggestion was not accepted. Too many would not be eligible!) Yet in the Spring of 1962 I was asked to prepare a paper. This was finished before I left for New Zealand in October. It was selected as the American paper to be presented at the one general session on agriculture. After returning from New Zealand about December 1, 1962, the Department of State arranged that I should attend the whole Conference as a member of the United States Delegation and at their expense.

The Conference (UNCSAT) was very large and included an extremely wide range of topics of which agriculture was only one out of twelve. Because of the glamour of nuclear energy and the like, agriculture received far less attention than it should have had. Since provisions were not made for paying the expenses of delegates from the newly developing countries, except for some small private grants to the UN, their delegations were small. And because of nepotism and the glamour of nuclear reactors and of modern computers, these small delegations had few experienced agricultural

scientists. The United States, United Kingdom, USSR, and France had very large delegations. But even on these delegations, the proportion of people in agriculture was very small considering the relative need in the new countries.

Many hundreds of papers were submitted. These were grouped mostly into specialized sessions, although each subject had one plenary session. Summaries of the groups of papers were prepared by the secretariat. Four or five sessions sometimes went on simultaneously. Besides these, a few small and a few large additional sessions were arranged after the Conference got going.

Only a few papers were selected by me to save. I tried to arrange for the National Agricultural Library to have a set of the agricultural papers and a microfilm of all papers. In addition, all the United States papers were separately printed in a set of booklets. (These are stapled and some are so thick that they are hard to read.)

Prof. Dr. J. J. Bouckaert, Rector of the University of Ghent, wrote to me 27 December 1962 that I had been unanimously voted by the Senate of the University to receive the degree of Doctor of Science, honoris causa. He asked that I come to the ceremony on 16 February 1963 - the Dies Natalis of the University. It was arranged in advance with the Department of State that I should go.

This Journal includes special notes and copies of many of my own papers, memos, and statements. Since these notes were written in haste, some of them may be in error. They are not to be quoted.

so Mummy and I drive in for them. Then in order to have some time I change to an earlier plane that leaves about noon. Mummy calls the airport at 10:45 and they tell her that the planes are flying so we drive in. I go to the National desk and find that they haven't been and are not flying. (All airlines are alike: they have a firm rule to lie to the passengers!) We hurry across to the Greyhound Station and I get a ticket for the New York express bus that is just ready to leave. We pull out at 12:10 p.m. The place the fog is very thick but we have an excellent driver. Although no stop is scheduled he makes one - he says, "to get my eyes back in their sockets." This gives us a chance for lunch about 4:00. We reach the New York City bus station about 5:00 p.m. I take a cab through terrible traffic to the East Side Terminal at 1st Avenue and 17th Street. I check in with Pan Am, get a glass of tea, and leave on the airport bus for Idlewild at 6:25. The traffic is simply awful and the bus driver excellent.

At Idlewild they say that the plane cannot take a nice little waitress takes me to the Clipper Club. The plane is finally called at 8:15, we are on board at 8:30, and are in the air at 9:15 - a little over two hours late.

GENEVA JOURNAL

February 2: The morning in Washington is a bit foggy. I pack early and find I have left my health cards at the office so Mommy and I drive in for them. Then in order to have more lead time I change to an earlier plane that leaves about noon. Mommy calls the airport at 10:45 and they tell her that the planes are flying so we drive in. I go to the National desk and find that they haven't been and are not flying. (All airlines are alike: They have a firm rule to lie to the passengers!) We hurry uptown to the Greyhound Station and I get a ticket for the New York express bus that is just ready to leave. We pull out at 12:10 p.m. In places the fog is very thick but we have an excellent driver. Although no stop is scheduled he makes one - he says, "to get my eyes back in their sockets." This gives me a chance for lunch about 4:00. We reach the New York City bus station about 5:00 p.m. I take a cab through terrible traffic to the East Side Terminal at 1st Avenue and 37th Street. I check in with Pan Am, get a glass of tea, and leave on the airport bus for Idlewild at 6:28. The traffic is simply awful and the bus driver unskilled.

At Idlewild they say that the plane cannot sail but a nice little hostess takes me to the Clipper Club. The plane is finally called at 9:15, we are on board at 9:30, and are in the air at 9:55 - a little over two hours late.

We have our dinner about 10:30. Happily for me (as a passenger not as a stockholder) the other two seats in my tier of three are vacant so I stretch out and doze as one day passes into another.

February 3: I am up again about 3:00 a.m. EST or 9:00 a.m. Paris time. I must have slept about $2\frac{1}{2}$ hours. As we come down, I see that the ground around Paris is covered with snow. We land about 11:10, roughly three hours late. We have quite a job getting our tickets rearranged on a later Swissair flight. I have a leisurely lunch and try to buy some perfume but the lady says she cannot sell anything in the free market for passengers to Geneva.

I am on Swissair No.417 at 3:00 p.m. Happily, I see my bag go on. We are in the air at 3:11 and down at Geneva at 3:54.

I am through customs easily and three of us share a taxi for the Hotel du Rhone. The ground has a considerable cover of snow. Just as I am registering a secretary of the State Department tells me that I am due immediately at a meeting of our delegation.

The chairman of the delegation, Dr. Walsh McDermott, makes a fine impression on me. He has remarkable facilities for remembering faces and names. He has a good sense of humor that livens up meetings without changing the subject. At this first meeting I get there to hear some explanations by



U. S. Mission
Geneva, Switzerland

No. 46

US UNCAST DELEGATION, Geneva,
Switzerland, February 4-20, 1963.

U.S. DELEGATION OFFICE PASS

This is to identify: Charles E. Kellogg
Charles E. Kellogg
(Signature of bearer)

Issued by: CH. E. HIGDON
Executive Officer

This pass must be presented upon entering the U. S. Delegation Office.

the chairman's main administrative assistant, Mr. David Tilson of AID. He can pack a large number of words into small content.

This is over about 6:00 and I unpack, write to Mommy, and meet the Ignatieffs who take me to the Au Fin Bec for supper. 'Twas very nice and I'm to bed with three sleeping pills at 10:00 p.m.

February 4: My alarm didn't go off so I'm just a bit late but I get to the Annex office building near the hotel in plenty of time.

Several explanations seem to be going on almost simultaneously. I find that I'm scheduled to visit certain session meetings and to report on them and that I have to put in papers requesting interventions for the sessions where I expect to speak informally at least twenty four hours in advance. So I fix these up for soil surveys and shifting cultivation. Then I have to arrange for inviting guests to the United States Reception on the 8th floor of the Palais.

I go to the main offices in the Gatt building, about one-third the way to the Palais. I have a talk here with Dr. Jackson Rigney of North Carolina State who is scientific secretary for agriculture on the US delegation. Here I get some more bundles of papers and find that I can invite two people for luncheon tomorrow noon. (But I don't know who is here yet.) I also discover that one can get free drinks sponsored by the US delegation in Room 7 of the Hotel du Rhone if he brings a delegate from an underdeveloped country!

Then we go on to the Palais. Hurry, hurry, hurry. I get in a seat at the main Salle reserved for the US delegation for the opening of the Conference.

After the meeting I slip down to the document room and get copies of my own paper. I meet Mr. Sorot Montrakul of Thailand whom I had seen in New Zealand. I find that Dr. S. R. Sen is to be here and Dr. Tom Walsh. I see Professor Staner.

At the afternoon general session Mr. Federov speaks for the USSR and ridicules the omission, for political reasons, of delegates from the Viet Nam People's Republic, the East German People's Democratic Republic, and the People's Republic of China. He says that the Chinese here represent no one. He speaks of great changes in society. Socialism began in the Soviet Union less than fifty years ago and now one third of the world's population lives in socialist societies. He speaks of the powerful national liberation movements many of which are trying to form socialist societies. Why? Because under them they can proceed toward economic development at once. He points with pride at the great progress of Uzbekistan and other formerly backward areas within the USSR. He emphasizes the great improvement within the Mongolian People's Republic. The role of science is clear in socialist countries because people understand history.

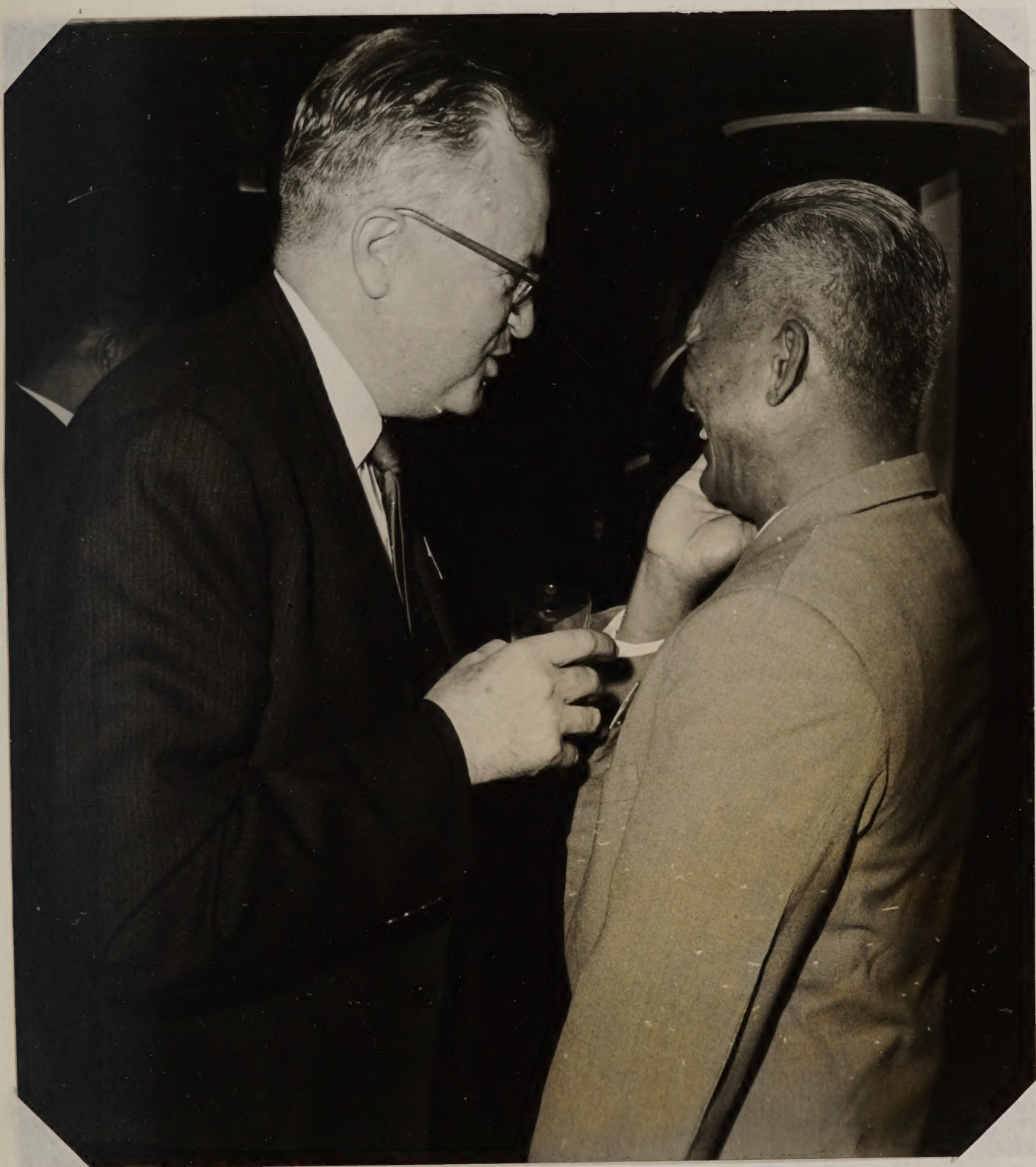
In planning, he says, we need to take account not only of what is now known but also of what may be found out. He explains how planning is done in the USSR and that his country is fully prepared to help new countries establish the necessary scientific institutions. He emphasizes the elimination of illiteracy in Cuba, Indonesia, and elsewhere. The Soviet Union will help train scientists and they learn within the socialist system the great importance of human welfare. He gives the usual plea for peaceful cooperation and coexistence among countries of different social systems. He says we have plenty of resources in the world but with primitive methods the balance may be so upset as to lead to waste of resources.

Wiesner of the United States speaks and makes a crack at the beginning by turning toward Federov and saying, "Now let's get back to the subject of the Conference." He points out that research teams should work by subjects or by subdivisions of subjects. He emphasizes that better professors are needed and **that** research and teaching for economic development go hand in hand.

The UNESCO speaker doesn't say much that interests me.

The session is over about six o'clock and I go to the 8th floor for the UN **reception**. Here I meet Tom Walsh, Ripley of Canada, Sir William Slater, and many others.

I am back to the hotel for dinner about 8:30. I work on my notes and go to bed at 10:00 p.m. At 2:00 a.m. I am wide awake, I take a bath, eat some fruit, and read. Then to sleep about 4:00 a.m.



CEK and Sorot Montrakul, Thailand,
at early reception at the Palais.

February 5: I am up at 7:00 a.m., sort my papers and get to the delegation meeting at the Annex at 8:00. I take one of the small buses to the Palais and look up Ignatieff. None of the Indians seems to be here yet.

The plenary session on agriculture begins at 10:00 a.m. with Sir William Slater in the chair. The Indian speaker is absent and Director General Sen of FAO makes a speech. The Finnish speaker goes quite a bit over his time and gives too much detail. Bogorov of the USSR speaks well about fishes but he regrets that we have not here the scientists from the People's Republic of China. Cuthbertson of the UK gives about the same speech he gave in Washington last year.

I can see that the crowd is a bit tired so I try to put a little fire in my talk. It seems to go over very well. (Included here is a copy of the full paper and of the short one I followed for the oral presentation.)

After the session I take Walter Russell and Tom Walsh as my guests for a luncheon with other Americans on the "8th Floor." We have a jolly good time.

At 3:00 p.m. I step into the Natural Resources session for a while and listen. But I'm simply too tired to stay for the whole of it.

I take a bus to the Gatt building and dictate a short speech to be used at the Soil Science session later. (Revised copy included in these notes.)



CEK giving his lecture on Interactions in Agricultural
Development at the General Session of UNCSAT, Tuesday,
February 5, 1963

INTERACTIONS IN AGRICULTURAL DEVELOPMENT

Charles E. Kellogg

(Speech given at General Session of UNCSAT, Tuesday,
February 5, 1963.)

An agriculture that produces a surplus over the needs of farm families makes possible the accumulation of capital for industrial development. Industry, in turn, helps make agriculture still more productive. Thus both the economic growth and the food supply of a country depend on an efficient and productive agriculture.

Essentially all the newly developing countries have ample resources of soil and water for abundant agricultural production if they are managed with even moderate efficiency. Although the total land area of the world is essentially fixed, the part of it suitable for cropping is highly flexible, depending on the state of the agricultural arts. Locally, these arts in turn depend on services for basic education, health, transport, credit, production supplies, research, technical assistance, and continuing education. Based upon recent trends in many countries we know that, given favorable conditions, many areas of the world have great opportunities for increasing the efficiency of agricultural production on both present and potential arable soils.

Experience has shown that transfers of seeds, animals, and production practices can be made easily and directly only between areas with similar soils and facilities. Yet the basic principles

of science and the skills of research can be widely applied. The soils and other growing conditions of most advanced countries contrast greatly with those of most of the newly developing countries. Contrasts are especially great between temperate and tropical areas. Because of the differences in soils and in stages of economic growth, emphasis must be placed on transfers of basic principles and research skills, and their local adaption in the unlike environments.

The principle of interactions and combined practices

Each farmer makes his arable soil from either a natural soil or an old arable soil. Only a small fraction of the soils of the world produce well under the simplest management - tillage, seeding, and harvesting. For efficient production nearly all soils require some modification through specific mechanical, chemical, and biological treatments to improve their productivity and to insure their stability. In modern agriculture our concern is with the response of a soil to management - with what we can make out of it- not with its productivity as it is. Much superior kinds and varieties of crops, and breeds of livestock, can be selected for the improved soils.

Every productive hectare of arable soil in the world has:

- (1) A balanced supply of plant nutrients for high yields, (2)
- adequate moisture and air in the rooting zone as the plants need

them, (3) kinds and varieties of crops with the genetic potential to respond, and (4) adequate protection of soils, plants, and animals against pests and other hazards. In addition, special practices are needed to protect some potentially arable soils from the sea, mountain torrents, runoff from heavy rains, floods, and high winds.

Any cultivator always uses a combination of practices, either a good combination or a poor one. The effectiveness of any one practice depends on the local kind of soil and the other practices in the combination. No practice in soil management is universally beneficial. What is good for one kind of soil can be wasteful or possibly harmful for another one, even on the same farm.

Recently great emphasis has been given to the critical need of much larger amounts of chemical fertilizers in the newly developing countries. The need is very great. But fertilizers are economically effective only if the correct kinds and amounts are used for the local kind of soil, and if the other practices required for good harvests are used at the same time. Nor can we expect full benefits from irrigation or terracing (or bunding) without good engineering designs and without fertilizers, good seeds, and pest control.

Failure to grasp the vital principle of developing combinations of practices that take full advantage of the interactions among soil characteristics and soil management practices is the greatest present technical handicap to agricultural development in the newly developing countries.

In areas of old traditional agriculture rarely can a significant economic increase be had by changing only one practice. For example, crop varieties that have been long selected to grow on infertile, dry, or waterlogged soils commonly lack the genetic potential to respond to modern soil management practices. Single-practice slogans are handicaps. Usually, several practices need to be changed at once for the cultivator to get the most for his labor.

Interactions in agriculture must be consciously looked for. When missed, people can be seriously misled. Survey-type interviews with cultivators have suggested that those using a single practice, such as fertilizer or improved seeds, have 20 to 50 percent higher yield than other cultivators. But commonly only a part of the increase can be credited to the one practice. Cultivators that adopt one improved practice are also likely to use other unidentified good practices that contribute to the better result. If cultivators over a considerable area have little benefit from fertilizers, we can expect an unbalanced advisory program that lacks appropriate emphasis on crop varieties, soil water management, or some other limiting factor.

The principle of interactions in agricultural development applies not only at the field level but also at the farm, community, and country level. Especially in mixed farming, a plan for high output from a whole farm takes account of each field and each enterprise in relation to the others. At a higher level, what can be done by a cultivator on his holding, or by a village of cultivators, depends on tenure arrangements and on the services available from outside the farm - opportunities for basic education, special training, credit, industrial supplies, technical assistance, and orderly marketing. One vital factor omitted from the combination can lead to low returns per hectare and per man-hour of labor. Finally, as the economy grows, non-agricultural sectors have an increasingly vital effect on agricultural development. The agricultural sector must have its appropriate share of the foreign exchange, industrial production, educational opportunities, research services, transport facilities, hospitals, incentive goods, electric power, and political responsibility.

Critical research needs

The total research effort in tropical agriculture is woefully inadequate to bring forth its great potential. Too many of the existing tropical research stations concentrate on a single crop or function. General research institutes, with competent staff in all lines, have two great advantages: (1) They can most easily receive and use basic principles from advanced countries

and (2) they can develop and test combinations of practices by kinds of soil, and can test whole farming systems that take full advantage of the interactions. The INEAC in the Republic of the Congo has shown dramatically what science and technology can do in tropical areas.

Soil surveys are vitally needed as a basis for (1) planning research, (2) extending the results of research to the specific tracts of land where they apply, (3) setting priorities of development, and (4) operational management of investments to insure the use on each holding of combinations of practices that will give high returns. (And when I say soil surveys, I include associated climate, etc.) Otherwise the benefits from large expenditures for schemes of land settlement, irrigation, drainage, and the like can be disastrously low. The local contrasts among soils from village to village and from field to field are so great that it is little short of reckless to ask cultivators to make drastic changes without the guidance of detailed soil surveys.

Simple field trials of fertilizers and crop varieties can give an early approximation of the potentials in a community. Then, with the results of properly replicated and randomized plots on good examples of the representative kinds of soil, chemical soil tests and plant foliar tests can be calibrated for use in giving suggestions to cultivators.

Finally, in this system demonstration fields should be used to show local cultivators the combinations of practices that are most rewarding under long-time use. We should avoid wasteful

controversy over which is the best tool to help cultivators find the best combinations of practices - long-time experiments, soil surveys, chemical tests, foliar tests, demonstration plots, or exploratory plot trials.

Successful systems involve all these tools and perhaps others. Although we should expect somewhat different systems in unlike communities and regions - depending on local soils, crops, and animals - the individual tools complement one another. Soil surveys without interpretation have little direct use. Nor do the results of experiments on unknown, undescribed soils, because no one can tell where the results are applicable.

Training

The transfer of the basic principles of agricultural science, research, and development from the advanced countries to the newly developing countries requires in both sets of countries men and women of great skill. Since economic growth begins mainly in agriculture, a newly developing country should give high priority to rural education and to training the scientists and engineers needed in agriculture and the closely related industries.

Experience has shown the great advantage of good institutes for such training within the country over those in unlike environments overseas. Since each country ultimately must train most of its own scientists and engineers anyway, it should give high priority to obtaining the services of professors - at home or abroad - whose students have high records of accomplishment.

In this way both first-class colleges and institutes for research and advanced study can be developed quickly.

The successful transfer and use of basic principles from the advanced countries require people with special skills and personalities. The ability to do excellent advisory work in his own country is not enough to qualify an advisor to work with cultivators where the natural environment is new to him - different soils, climate, crops, and livestock - and without the machines, chemicals, and services he takes for granted at home.

He must have a deep understanding of the basic principles in his field and their relation to other fields; the skill to diagnose problems; and the inventiveness to develop improved practices and systems that cultivators can carry out with their skills and with the resources available to them.

In addition, most successful advisors have a combination of humility, patience, industry, firmness, and courtesy that inspires confidence from high governmental officials and cultivators alike.

Organization

Many successful schemes are in use for organizing agricultural education, research, advisory services, technical assistance, and the other services to take full advantage of the many interactions. No two countries are alike, and programs need to vary with stages of economic growth. Successful organizations are built on existing

ones, taking account of the genius of the people, their traditional ways, and what can be reasonably expected from cultivators and from local and national leaders.

The fitting of science and technology into any social system brings some change. We cannot foresee all of their effects on people's ideas and motivations. But we can avoid more cultural changes than necessary for effective results.

The organization should provide for: (1) The prompt use of research results in teaching, advisory work, and policy formation; (2) full cooperation with cultivators, in contrast to doing things for and to them; (3) firm leadership by people with both scientific and administrative ability; (4) emphasis on as high ability, pay, and distinction for field scientists and technicians as for those working in offices and laboratories; (5) reasonable freedom for field workers to act on their own initiative; and (6) fair rewards according to ability and the results achieved.

Planning for economic growth should be built on a knowledge of the resources and skills available. These are commonly highest in agriculture, fishing, and forestry. People need to learn that the total of individual investments of both labor and small sums by many cultivators exceeds the total of a few dramatic factories, and that investments in basic industries cannot succeed amidst a backward agriculture. Nor can everything be done at once. By

concentrating the available resources, labor, funds, and skilled people on the area programs that have the greatest prospects, economic growth is stimulated. In nearly all of the newly developing countries this means much greater emphasis than now on agriculture and the industries that serve agriculture. As these go forward, savings accumulate for the industries that service them.

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UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS,

Agenda Item: C

United States of America

INTERACTIONS IN AGRICULTURAL DEVELOPMENT

By Charles E. KELLOGG,
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U.S. Department of Agriculture,
Washington 25, D.C.

Papers have been contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas as working papers for that Conference. They are published as presented by the contributors, and the contents and the views expressed are those of the contributors. (See notes overleaf.)

NOTES

1. Papers selected for inclusion in General Sessions will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.
2. Papers selected for inclusion in Specialized Sessions will be available at the Conference in only one of the above official languages.
3. Summaries of all papers, as submitted by contributors, will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.
4. Papers and summaries will not be available for general distribution in advance of the Conference. They will be published in advance in limited quantities only for the use of delegations of participating governments and of other authorized participants. Post-Conference publication and general distribution of the Conference Proceedings will follow United Nations practices as laid down by the United Nations Publications Board.

INTERACTIONS IN AGRICULTURAL DEVELOPMENT

by
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Washington 25, D. C.

Introduction

1. Historically, an agriculture able to provide a surplus over the needs of the farm families made possible capital accumulation for industrial development. Industry, in turn, furnished materials and services for a still more productive agriculture. Thus has agriculture initiated the kind of industrial development that characterizes the economic growth of the so-called advanced countries. The levels of agricultural production per man hour per hectare have steadily increased as the materials of industry have been substituted for direct farm labor.

2. As agriculture develops, the complexity of its technology grows. The natural soils are greatly modified, chemically, physically, and biologically; water is controlled; improved genetic types of plants and animals are selected and bred for specific areas; and methods are worked out for soil, plant, and animal protection. Success on any one field or farm depends on having the correct combination of practices.

3. In this paper we shall be concerned with the application of the basic principles of interactions to speed along the productive agriculture requisite for economic growth. The understanding and application of this principle is our most critical technical problem. Much of the technology must be developed on the spot, especially the proper combinations of practices for efficient soil use without waste, which is soil conservation. Yet the basic principles of science on which our technologies are based and the skills of research can be transferred from country to country.

Resources available for agricultural development

4. Nearly all the newly developing countries have ample resources for abundant agricultural production if they were managed with even moderate efficiency. China and a few of the smaller countries of arid regions may not have, but Africa and South America have tremendous areas of soils that could be made highly productive for crops and livestock with the use of modern technology and the machines and chemicals of industry.

5. Some broad estimates of soil resources and food production potentials of the world were made in 1950 (5)^{1/} based on assumptions of only low to moderate levels

^{1/} Numbers in parentheses refer to "Literature Cited" at the end of the paper.

of management. Potential increases in harvests from the soils then in use, plus those from 1.3 billion acres suitable for cropping but not then in use, were more than ample to meet the estimated food needs of the world for some time ahead. If we assumed the wide use of combinations of practices adapted to the local kinds of soil, new estimates would be much higher. Then too, we must bear in mind that technology gives us opportunities not only to produce more efficiently on acres already in use, but also to use many acres unsuitable for cropping with older methods.

6. The advanced countries have generalized or schematic soil maps for planning and for the extension of agricultural knowledge. The kinds of soil are fairly well known, even though the detailed soil maps for operational planning are not yet available for all parts of these countries. But the less developed countries have very few soil maps for general agricultural planning and almost none for operational planning. In fact, millions of cultivators in the world are using soils that have never been examined scientifically. No one knows where they belong in a system of soil classification or how they could be expected to respond to any system of management besides the local one in use. This lack greatly handicaps the use of new technology by cultivators.

7. New research and technology and new industries to serve agriculture have pushed up the agricultural potentials even more than production has increased. That is, the gap between the potential production from our soils and current food production continues to widen. Although the total land area of the world is essentially fixed, the part of it suitable for cropping is highly flexible. The acres of soil used for crops at any time depend upon need (or economic demand), the state of the agricultural arts, transport, other facilities and services, and the skills and financial resources of the cultivators.

8. Because of favorable circumstances for combining practices in the advanced countries, agricultural science and technology have led to dramatic increases in farm production per man hour per hectare, especially since 1947. As the principle of interactions is more fully applied, more progress can be expected. Because of the difficulties of making rapid adjustments in rural land use, several of the advanced countries are likely to be faced with problems of management of food supplies or surpluses during the years just ahead.

9. The effectiveness of rain water, and of most irrigation water, can be greatly increased with improved practices. Much unused stream water can be impounded for irrigation. Low-cost methods for removing salt from seawater may lead to further expansion of arable acres.

Contrasting environments of the advanced and newly developing countries

10. The soils of temperate regions, on which scientists and farmers of the advanced countries have had their experiences, differ widely from most of the soils of the tropics and subtropics, which cover large parts of nearly all the newly developing countries. The seasons, length of day, and other environmental conditions are also different, to say nothing of the social systems. Thus many modern agricultural techniques cannot be shifted from the advanced countries to the newly developing countries without great research efforts, including soil surveys and field testing of new combinations of practices.

11. The tropics and subtropics have an enormous variety of soils--more kinds than in all the rest of the world. In the rainy tropics soil minerals are highly weathered and the soils are leached of soluble materials. Many of the old land

forms in tropical areas have been subject to wide variations of climate and vegetation during their life histories. Even soils that now have long dry seasons once went through the intense weathering processes of a warm, humid climate.

12. Let us look briefly at the cycle of plant nutrients: In the humid tropics all the soluble materials that can be leached are leached out, except those tied up in the vegetation itself. Once the mineral plant nutrients and nitrogen from the soil and the air become incorporated into the trees, they can scarcely escape. Fallen leaves, twigs, and stems are immediately attacked by termites and other organisms. The plant nutrients released enter the roots of other plants. We say of the rainy tropics, "the fertility capital is small but its circulation rapid." If cultivators cut and burn the trees and use the soils for crops, nutrients leave the soil rapidly, partly in harvested crops and partly by leaching. Locally adapted fertilizers are needed.

13. Tillage practices are also different in the tropics. For some kinds of tropical soils, especially the sloping Ground-Water Laterite soils, direct exposure to sun and rain must be avoided through the use of mixed cultures. Ordinary plowing and tillage lead to erosion, then to irreversible hardening of the laterite, and finally to an unproductive, slag-like crust.

14. The general use of mixed cultures and of forest fallow for maintaining soil productivity requires much land and labor. The "slash and burn" practice of early European agriculture is called by a host of names in the tropics and subtropics, all near synonyms for "shifting cultivation." Recently many have spoken out emotionally against this system, mainly because of the loss of the trees. But the 100 to 200 million people who grow their food under shifting cultivation need proved alternative systems before they can stop the cutting and burning of trees. First we need to know how these systems work. Then we should be able to substitute other, more productive systems. Besides research, this takes education, credit, transport, and access to industrial materials, especially chemicals and machines.

15. Although most tropical soils are naturally deficient in available nutrients for crop plants, some excellent traditional agriculture in the tropics suggests three exceptions, which make up a small part of the total: (1) Some strongly sloping soils from basalt and other basic rocks have enough gradual erosion to remove leached surface soils at about the same rate as the weathering of the rock beneath. Thus the rooting zone of the soil is gradually renewed by nutrients from the weathering rock underneath it. (2) Other upland soils are enriched by additions of nutrient-rich volcanic ash falling on the surface. (3) Soils along some streams are continually renewed by additions of nutrient-rich alluvium during flood periods, especially alluvium originating from basic rocks. Where cultivators can plant and harvest a crop between periods of flooding, soil productivity is continually restored. Where levees or other works prevent flooding of such soils, fertilizers are ultimately needed even to maintain the original yields.

16. Most soils in the tropics and subtropics give poor harvests under "simple" management. Soils now under forest can give low to moderate crop yields for two to six years after clearing. But without fertilizers and other soil conservation practices, savannah grasses come in and cultivation can continue only with low yields. Then, on nearly barren, sloping soils of low permeability, erosion can be highly destructive, especially where the runoff water is concentrated. Yet many natural soils in the tropics are highly responsive to adapted combinations of practices specifically designed to develop productive arable soils from the individual kinds.

17. At present, we have three general levels of agricultural management of tropical soils: (1) Systems of indigenous cultivators with neither scientific guidance nor the products of industry; (2) systems that have been improved as a result of scientific research and testing but that make little or no use of industrial products, and (3) systems that make full use of modern science and of the products of industry. On soils of high potential both total production and labor income from adapted systems under these three levels vary enormously.

18. Despite the great variety of industrial, ornamental, and food plants in the tropics, relatively few are indigenous to any one area. Thus we need to study the soil requirements of the useful plants and test them far more widely than has yet been done. For this purpose, and for making orderly transfers of proved combinations of technical practices, we urgently need a general world soil map at a scale of about 1:1,000,000, certainly not less than 1:2,500,000, because the map needs to show a great many names of streams, towns, and other local reference points so the reader can locate himself on the map. He must be able to do this accurately enough to find out how the soils of his community compare to those of other places.

Combined practices and the principle of interactions

19. Each farmer or gardener makes his arable soil from a natural soil. He may alter it only a little or he may change it drastically through reshaping the soil surface for water control, adding fertilizers and other materials, or tilling in depth. He tries, or should try, to make the soil as nearly ideal as possible for the crops most likely to produce well. Only a tiny fraction of the soils of the world produce well under simple management - clearing, plowing, and seeding.

20. For each environmental situation we need to have standards of the characteristics of the arable soil that we should develop and maintain for the best results. Since the effect of any single soil characteristic depends on the many others in the combination that makes a soil of a certain kind, we cannot make useful generalizations in terms of single soil characteristics. For most crops one needs a stable soil that water, air, and roots can penetrate deeply in order to have a large volume of soil for the storage and release of water and nutrients to the roots. Above all, it should be clear that no practice in soil management is universally beneficial. What is good on one kind of soil may be downright harmful on another, even on the same farm.

21. Every productive hectare of arable soil in the world has at least four basic conditions, resulting from either custom or planning. If the practices for any one are neglected we can expect little from practices that may take care of the others. And each unique kind of soil requires a unique combination of practices for the best results. These four basic conditions are:

22. A balanced supply of plant nutrients for high yields. For economical results, chemical fertilizers are nearly always necessary to supplement the supplies of one or more of the nutrients within the soil and of those contributed by compost, crop residues, manures, and green manures. At least some chemical fertilizers are needed on nearly all arable soils, and they are especially critical in the tropics.

23. Adequate moisture in the rooting zone of the soil when the plants need it, without the waterlogging that deprives roots of air. An ideal soil holds abundant water and lets the excess drain on through. Few soils have a combination of characteristics and associated climate for ideal water control. Some need

shaping, diversions, or terraces (bunds) for runoff control; some need irrigation; others need drainage; and many need a combination of two or more of these.

24. A variety of crop (or varieties of several crops in rotation or in mixed culture) adapted to the environment and with the genetic potential to respond to the most favorable arable soil that it is practicable to develop.

25. Protection of plants (and of animals for which the crops may be grown) against pests and other hazards.

26. Some potential arable soils also need protection from the sea, mountain torrents, runoff from heavy rains, floods, and high winds.

27. Recently great emphasis has been given to the critical role of chemical fertilizers in food production in the newly developing countries. The need is very great. But fertilizers are economically effective only if, (1) the correct kinds and amounts are used for each local kind of soil and (2) the needed practices to meet the other requirements for good harvests are adopted at the same time. Nor will irrigation be successful unless a good job is done of shaping the surface and of avoiding waterlogging, and of meeting the other three conditions. (4)

28. Failure to grasp this vital principle of interactions is the greatest present technical handicap to agricultural development in the newly developing countries. In old areas where traditional cultivation has been going on for centuries, rarely can economic progress be made with only one change. Usually all four essential conditions must be changed simultaneously. Most of the traditional crop varieties lack the genetic potential to respond to moderate or high fertility and the proper balance of water and air in the soil. For generations the cultivators selected seeds from crops that did best with low fertility, poor supplies of soil moisture, or waterlogging. Thus irrigation and fertilization, even if done well, are commonly uneconomic with the traditional varieties of crops. According to the same principle of interactions improved varieties are commonly disappointing without improved soil fertility and water relations.

29. Recent experiments with maize in the northern part of India illustrate the principle. In order to study the interactions between variety and fertilizer, the other cultural practices on all plots were improved. Thus the contrasts between yields on most cultivators' fields with the old practices and the top yield, including fertilizer, hybrid seed, and good cultural practices would be much greater, say four- to six-fold. The following are averages of experiments at four locations for 1960 and 1961: 2/

	Bushels per acre	Tons per hectare
Native variety, no fertilizer	37.5	(2.1)
Hybrid, no fertilizer	57.8	(3.2)
Native variety, plus fertilizer	55.3	(3.1)
Hybrid, plus fertilizer	92.3	(5.2)

30. In other words, each vital practice in the combination depends on the support of the others. No one can say how much of a crop yield is due to fertilizer, how much to a new variety, how much to irrigation, and so on. Many attempts are made

2/ Osler, Robert D., The Rockefeller Foundation, private communication. (1962)

at getting such figures, but we must be aware of the chances for serious error. One needs many practices and favorable environmental factors in proper combination for even a moderate harvest.

31. Many interactions in agriculture are a bit hidden. Unless we find them we can be seriously misled. For example, cultivators using fertilizer, new varieties, or some other improved practice have been interviewed. They may get 20 to 50 per cent more yield than others. But it is wrong to assume that all of the differences are due to the particular item or items under study. Cultivators who take the trouble to use new varieties usually carry out other improved practices that help make the variety effective. The same is true for fertilizers and other practices. On the other hand, some individual farmers, or even farmers over a large area, have had little benefit from fertilizers. Such results suggest an unbalanced advisory program. They did not understand the other practices that were required to make the fertilizers effective on the kinds of soil they had. (3) Elsewhere, we can see similar good harvests on contrasting soils without realizing they were obtained by different methods.

32. Perhaps it is only human to look for a simple, single answer, or slogan, to the problem of increasing production. Some people go easily to the notion that agriculture in general is very simple. Nothing could be further from the truth. Agricultural development means dealing with thousands of unique kinds of soil and of working out the alternative combinations of practices that maximize the results from land, labor, materials, and management. Modern science gives us the tools for working out an efficient agriculture for local areas along these lines. Once worked out, the principles can be made clear to cultivators with simple diagrams and explanations. (2)

33. The principle of interactions also applies to working out the best system for an operating unit made up of fields of different sizes and kinds of soil. What should be grown on one field depends partly on what can be grown on the other fields, especially in mixed farming of crops and livestock or of industrial crops and food crops.

34. The principle of interactions should be observed in planning the services that make it possible for cultivators to use the most effective combinations of practices. What can be done by a cultivator on his holding, or by a village of cultivators, depends on his tenure arrangements and on the services available from the outside - opportunities for basic education, for learning special skills, for credit, for industrial supplies, for technical assistance on special practices, and for orderly marketing. No vital factor can be omitted.

35. The successful farmers of advanced countries have learned how to combine practices for maximum economic production. Together, public and private services have made it possible for them to do so. Farmers have learned this skill better than those agricultural advisers who have neglected the aspects of food production outside of their specialties. Rare are the places in the world lacking only one or two key items for high production.

General research stations

36. The total research effort in tropical agriculture is woefully inadequate to bring forth its great potential. Research is now only a fraction of that in temperate regions. Many of the existing tropical research stations are working along narrow lines, even on a single function. The need is for general research stations with good staffs in all lines, including the social sciences, and provisions for soil surveys and related field research. Competent staff at such stations can receive and make full use of the basic principles and research

methods already available from the advanced countries. Farming systems can be developed and tested that take full advantage of the principle of interactions - systems that combine soil, crop, and livestock practices for the several kinds of soil. In this way the developing countries can adapt these principles and methods to their own local environments.

37. An excellent beginning along the most advanced lines had been made by INEAC (L'Institut National pour l'Etude Agronomique du Congo) in the Republic of the Congo, and many great improvements have been put into effect. The results apply, of course, to similar tropical soils elsewhere. A failure of this system of advanced research institutes to move forward would be an agricultural tragedy for cultivators on similar soils everywhere.

38. To establish advanced general research stations requires the solution of difficult problems of financing and recruitment -- especially recruitment. Good results can be expected only from research workers highly skilled in the basic sciences of agriculture who are able to work in the field as well as in the laboratory and on experimental plots.

Soil surveys and other field studies

39. Badly as the general research stations are needed, some time must elapse before many new ones can be fully staffed and providing the needed results. Soil surveys, exploratory studies of existing agriculture, and the field testing of promising new combinations of practices can be organized quickly, provided the difficult problems of recruitment and training are solved.

40. Two kinds of soil maps are needed: (1) Soil maps of small scale for general planning, especially as aids to establishing priorities for agricultural development, are an immediate necessity. Skilled scientists can make these quickly at low cost. (2) Detailed soil maps of large scale for operational planning on individual holdings should be made before significant funds are spent for road construction, irrigation, drainage, land clearing, fertilizer programs, and the like. Otherwise, investment funds are likely to be wasted. These detailed soil maps deserve the greatest emphasis. (8)

41. Work on a general soil map begins in the library. Any kind of soil results from the interactions of five interrelated factors -- climate, vegetation, parent material, relief, and age of the land form. By study of available data on soils and on the five factors that produce them, a first approximation for a general soil map is made at scales of 1:250,000 to 1:1,000,000 depending on the data available. Then within each soil region on the map having agricultural potential, representative sample areas of about 2,000 to 5,000 hectares should be selected for detailed classification, interpretation, and mapping at scales near 1:20,000. With completed legends and interpretations of a sample area, demonstrations and training can be organized for the advisory staff working with cultivators in the region. These people should be able to recognize the main kinds of soil outside the sample area and to suggest improved systems based not only on local data but also on data about the same kinds of soil elsewhere in the world. As these sample areas are being mapped, the first approximation toward a general map should be corrected by field reconnaissance methods. The need of such a map for country planning, and for establishing priorities for agricultural improvement and new settlement, can scarcely be overemphasized. (7) (8)

42. Detailed soil surveys should be programmed in accordance with priorities for agricultural development. The local contrasts among soils from village to village, and even from field to field, are so great that it is little short of reckless to

ask cultivators to change their systems of farming or to undertake farming on new lands without the guidance of detailed soil surveys. The general soil maps aid only in establishing priorities on the basis of large communities or regions. They do not give the necessary guidance for planning on individual holdings, which is the very basis for soil and water conservation -- for using the adapted combinations of practices that maximize agricultural production and individual earnings on a long-time basis.

43. Along with the soil survey, the experience of cultivators now using the soil should be studied and synthesized. Even though the local systems may seem primitive, they have been developed through long experience and much can be learned from them. Such learning is commonly the first step toward suggesting improvements.

44. Simple field trials of fertilizers and of crop varieties can be made for an early approximation of the opportunities for new and improved practices. For example, plots can be laid out with a moderate application of nitrogen alone and in various combinations with phosphorus, potassium, magnesium, and other plant nutrients expected to be in short supply. For an early approximation, the harvests from these exploratory plots need not be weighed. The soils and other growing conditions need to be described. The conditions of the crops are recorded during the season. By assembling the results by kinds of soil and combinations of practices, scientists can make useful estimates of the most important nutrient deficiencies and of the probable fertilizer responses. (4)

45. As the agricultural development program goes forward, controlled experiments should be laid out for studying responses to the most promising combinations of plant nutrients with the most promising kinds and varieties of crops. Such plots are expensive to maintain and should be laid out only on carefully selected examples of the most important kinds of soil. The uniform experimental tract should be large enough for laying out properly replicated and randomized plots. Such plots are also necessary for the standardization of the results of chemical soil tests. Only after such standardization by major groups of soils can chemical tests be used in cultivators' fields for giving reliable predictions about the probable responses to fertilizers.

46. Finally in this sequence, demonstration fields or farms should be established that illustrate the combinations of practices that are most rewarding under long-time use. No system under which the soils deteriorate should be recommended. For economic results most soils must be built up to much higher levels of productivity than they have naturally. Then cultivators should be able to maintain them at the high levels.

Training scientists and engineers

47. Perhaps second only to the need for general education in the newly developing countries is their need for training their own scientists and engineers. In many countries now fewer village boys and girls than town boys and girls can meet the entrance requirements for college. Scholarship standards and opportunities in agriculture tend to be lower than those in law, medicine, and literature. But as economic growth begins mainly with agriculture, the need is greatest for scientists and engineers in agriculture and its closely related service industries.

48. Many students are going to the advanced countries for college training. In agriculture, at least, the results have not been conspicuously successful. First, the number trained is hopelessly below the need in these countries. Second, in temperate regions only a tiny fraction of the most experienced professors can explain the application of the principles of problem diagnosis, of interactions,

and of technical invention in tropical environments. Third, during their formative youth young men and women are adjusting to a social system unlike their own. Many find it even harder than before to work with their own country people. After years on fellowship grants, some students from the newly developing countries either do not return home after graduation or find readjustment difficult if they do return. For their newly acquired tastes, the salaries of junior scientific positions seem inadequate.

49. Most training of professional agriculturists can be done best locally. Scholars from advanced countries, whose students are highly successful, can help organize and improve the teaching in local colleges and universities, including combined research institutes and graduate schools. Students can live and study in the environments where they will work. Demonstrations and exercises in problem diagnosis and interactions are easily arranged with local soils, crops, and livestock.

50. Graduates can be tested in local positions. Those demonstrating technical competence in the field, resourcefulness, and ability to work with cultivators can be selected for local graduate study. These graduates can be appraised after work in the field again. They are more mature. From among them, selections can be made for further study abroad to gain special skills through association with advanced experts in universities, in industry, or in government.

51. Eventually each country must train most of its own scientists and engineers. The need is urgent now. Thus I believe that the development of first-class colleges should have the highest possible priority for the use of funds and scholars under technical assistance programs.

Scientists and technicians for technical assistance

52. Transferring the skills of agricultural science and technology from the advanced countries requires men and women with special personalities and skills. Many professional agriculturists who are successful in their own communities cannot succeed abroad. Improved methods for recruitment of the best people should be given the highest priority. The successful adviser for the newly developing countries has the following qualities:

53. He is competent both in the basic principles of his field of learning and in the application of the principle of interactions.

54. He knows that few farm practices can be transferred in their familiar form to the newly developed countries. But he has both the imagination and resourcefulness to diagnose problems and assess potentials in terms of basic principles, in his own and related fields, and to invent new practices suitable to the natural and cultural environment. Where familiar tools, chemicals, and services are lacking, he makes do with what he can get.

55. He understands his role as an adviser and that local officials cannot always follow his advice for reasons not clear to a newcomer. What seems obviously good to him, can involve more risk than a cultivator dare take without demonstrations.

56. With patience he tries to understand the local customs and mores and avoids clashes as far as the demands of his work permit. He looks for ways of doing and explaining his work that are acceptable to the responsible men and women of the community.

57. With courtesy and firmness on basic principles, he can deal directly with top administrators, his opposite numbers, junior trainees, and cultivators.

58. He has an enormous capacity for sustained hard work under less than ideal conditions, both to get the job done well and to promote a sense of urgency among others.

59. Finally, the above adviser has a large capacity to learn and an obvious desire to be helpful. He knows that his useful social influence comes from the results of his work, not from talk against things.

Principles of organization for agricultural improvement

60. The world has many successful schemes for organizing agricultural education, research, advisory services, technical assistance, and the other essential services. Increasingly, both what can be done in agriculture and the welfare of rural people depend on economic conditions and programs in the non-agricultural sectors. No two countries are alike; and programs need to vary within an individual country at different stages of economic growth. Nor can we expect useful results from institutions and programs beyond the administrative and production skills of the people available to carry them out.

61. One should not try to impose a complete model of organization for agricultural development. To be sure, success depends on adherence to basic principles for getting the work done effectively. Yet an effective local organization, and the relationships among its parts, depend on the existing institutions; the genius of the people; traditional ways of doing things; and what can be reasonably expected from cultivators, from local leaders, and from top government leadership.

62. One rarely has a chance to start programs in a new, unpopulated area. Most new programs are launched through existing institutions and with people who already have personal plans, hopes, ideas, and backgrounds. Goals in agriculture must harmonize reasonably with their other goals, especially for health, education and economic security.

63. Some have said that the local culture should not be disturbed. Such a goal is impracticable. Science and technology cannot be fitted effectively into a social order without at least some change. Nor are many of us able to foresee all the effects that science and technology may have on the ideas and motivations of people. Yet one could argue that it is wise to avoid any more cultural changes than necessary for effective results.

64. On the other hand, many of the people being aided are in a hurry. They have built up strong hopes. They are not going to wait forever. Slow gradualism in the application of science and technology, with too little social change, can result in such concentrations of skills and political power that the lot of the cultivators is no better.

65. Schemes must be put into effect to use the results of research promptly in teaching, advisory work, and policy formation; and for research scientists to spend enough time in the field to diagnose problems and to become aware of limiting factors in agricultural systems.

66. Professional agricultural people in research, advisory work, technical assistance, and the like, must be able to work with cultivators as equal citizens. In recruitment and training, this skill should be emphasized as much as the technical ones. Regardless of sincerity, professional people who do things only for and to cultivators rarely gain their confidence.

67. Firm scientific and technical guidance is essential at the operating administrative levels of agricultural research and other technical programs. A few have said that specialists are too narrow in viewpoint for administrative roles. The views of some specialists are narrow; those of others are very broad. Science and technology demand specialization, and it does not necessarily mean narrowness. On the other hand, those with only a smattering of learning in many subjects, but who lack the self-discipline acquired from deeper learning in one field, are ill-prepared for making decisions that involve either one or many sciences. Specialists with broad points of view are the most effective leaders of operating agricultural programs. They can attract and keep the loyalty of other scholars, who have confidence in their decisions.

68. No social or financial advantage must be permitted for workers in laboratories or offices over those for field workers. This is a serious problem in several places. Some with narrow views of the scientific method confuse it with laboratory practices. Others feel that outdoor work is socially degrading. Special efforts may be needed to maintain essential standards of high scholarship for field work. Costs for travel and living away from headquarters should be fully compensated. Although laboratory and station research is needed, the great immediate need in most newly developing countries is for scientific and technical work in the field.

69. Working procedures need to be tailored to the programs. In scientific and technical work individuals and intermediate administrators need leeway to employ people and to make purchases. Getting detailed approvals in advance prevents efficient operation; and post audits can prevent fraud.

70. Opportunities for promotion have a great influence on morale. Promotion schemes should provide for multiple appraisals, mainly by competent people in the same field of work as the one being appraised, and promotions should be based on demonstrated accomplishment.

71. Scientists and technicians on short tours from other countries should work with competent opposite numbers from local agencies. The combination of special skill and local knowledge results in practical ideas and programs impossible of conception by either man alone. Local junior staff should be assigned to such successful teams for on-the-job training.

Country planning for economic growth

72. Effective programs of technical assistance require some kind of country planning. One can easily see many things that could be done in a newly developing country. But the local people cannot do everything at once and get the economy going too. Actually, too many kinds of projects may be going ahead with subsidies and grants from various sources. Nearly all of them use some scarce foreign exchange and make claims on the small corps of educated people. As a result efforts get spread too thin. People have an understandable urge for many kinds of amenities; but some of these must wait for an economic base to support them.

73. Planning for economic growth should begin by taking advantage of the resources and skills already available. We have emphasized the need of a soil map for this purpose. Appraisals are also needed of resources of water, forests, minerals, and the skills of the population. The skills are commonly greatest in agriculture. Even though farming may not be near the potential, this does not mean that the cultivators lack all basic skills or are unable to take on new ones rapidly as training, credit, chemicals, and machines become available.

74. Country planning should be selective. Priorities should be set according to the economic advantages. Basic education and public health should be high on the list. Key roads and certain power developments would be given high priority. No country can be expected to go forward with continual economic growth until the cultivators are producing a surplus over their immediate needs.

75. Generally speaking, agriculture is most efficient in countries with a growing industry. But the fact that capital accumulation to get industry started came out of agriculture has commonly been overlooked in planning for economic growth in some of the newly developing countries. Besides agriculture, fishing, forestry, and perhaps mining are early sources of savings. The lack of adequate rural statistics has been another reason for neglecting the importance of agriculture as a source of savings in many newly developing countries. Huge hydroelectric plants, steel mills, and the like are easy to count. It is not always easy to count the investments of individual cultivators that may add up to a large and significant total. Suppose, for example, that most cultivators in a newly developing country developed one-tenth of a hectare or more of new excellent arable soil, bought two or three more bags of fertilizer, and bought a duster for insecticides. If the research and advisory services have been reasonably sound, these add up to a large total investment that leads at once to increased agricultural production and an opportunity for saving. (1)

76. This means that first emphasis should be placed on industries that service agriculture, such as chemical industries, machinery industries, transport, marketing, and the like. If these are properly organized, they too will return savings that can be used for the still more basic industries. This is the way to a firm basis for economic growth. Then as industry develops and furnishes more materials for agriculture, we see a substitution of off-farm labor for direct farm labor, which we commonly call "farm operating capital." In order to get the benefit from this, many country people need to have industrial jobs so that the total labor force is employed efficiently in the use of resources.

77. None of us is naive enough to think that all planning in the newly developing countries can or will be carried out according to rigid guidelines. Ministers of finance will need to allocate some scarce foreign exchange for motion pictures and other luxuries. This won't be too bad if they keep these to the minimum so that both the educated people and the available funds can be concentrated on the basic programs that can get the economy started upward. In most of the newly developing countries this means greater emphasis on agriculture. And to have soon a productive agriculture that leads to firm economic growth requires farm, community, and country planning that combines services and practices to take full advantage of the resulting interactions. Each hectare with a highly rewarding harvest has the proper combination of practices that fits the local kind of soil.

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DLEUF 38

AGRICULTURE CALLED PRIME CONCERN IN A NATPON'S DEVE90.3,5 YYP)
PGENEVA, FEB. 5--NEARLY ALL DEVELOPING COUNTRIES HAVE AMPLE
RESOURCES FOR ABUNDANT AGRICULTURAL PRODUCTION IF THEY ARE
MANAGED WITH EVEN MODERATE EFFICIENCY, CHARLES E. KELLOGG
OF THE UNITED STATES HAS TOLD A UNITED NATIONS CONFERENCE HERE.

CAPITAL ACCUMULATION FOR INDUSTRIAL DEVELOPMENT HAS BEEN
MADE POSSIBLE HISTORICALLY BY AN AGRICULTURE ABLE TO PROVIDE

A SURPLUS OVER THE NEEDS OF THE FARM FAMILIES, MR. KELLOGG NOTED.

THE U.S. SOIL CONSERVATION EXPERT WAS ONE OF FIVE SPEAKERS
WHO ADDRESSED A GENERAL SESSION ON AGRICULTURE TUESDAY AT THE
U.N. CONFERENCE ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS-DEVELOPED AREAS. OTHER TOPICS COVERED
WERE LAND USE, FORESTRY PLANNING, ANIMAL NUTRITION AND FISHERIES.

MR. KELLOGG SAID AFRICA AND SOUTH AMERICA HAVE TREMENDOUS
AREAS OF SOILS THAT COULD BE MADE HIGHLY PRODUCTIVE FOR CROPS
AND LIVESTOCK WITH THE USE OF MODERN TECHNOLOGY AND THE MACHINES
AND CHEMICALS OF INDUSTRY.

HE AGREED THAT THE NEED FOR CHEMICAL FERTILIZERS IN THE
NEWLY-DEVELOPING COUNTRIES IS GREAT. BUT HE WARNED THAT THEY
WILL BE ECONOMICALLY EFFECTIVE ONLY IF THE CORRECT KINDS AND AMOUNTS
ARE USED FOR EACH LOCAL KIND OF SOIL, AND IF NEEDED PRACTICES
TO MEET THE OTHER REQUIREMENTS FOR GOOD HARVESTS ARE ADOPTED
AT THE SAME TIME.

HE CALLED THE TOTAL RESEARCH EFFORT IN TROPICAL AGRICULTURE "WOEFULLY INADEQUATE" TO BRING FORTH ITS GREAT POTENTIAL, POINTING OUT THAT IT IS ONLY A FRACTION OF THAT IN THE TEMPERATE REGIONS. BUT HE SAID SOIL SURVEYS, EXPLORATORY STUDIES OF EXISTING AGRICULTURE AND THE FIELD TESTING OF PROMISING NEW COMBINATIONS OF PRACTICES CAN BE ORGANIZED QUICKLY, PROVIDED THE DIFFICULT PROBLEM OF RECRUITMENT AND TRAINING IS SOLVED.

SECOND ONLY TO THE NEED FOR GENERAL EDUCATION IN THE NEWLY DEVELOPING COUNTRIES IS THEIR NEED FOR TRAINING THEIR OWN SCIENTISTS AND ENGINEERS, MR. KOBLOGG SAID. Y

The Guardian

5 Feb 1963

Experts and sub-experts

An attempt will be made in Geneva during the next fortnight to put some of the richer nations' scientific and technical knowledge on display, so that the poorer nations may decide how much of it is relevant to their needs and whether it can be applied. The urgency of the problem is acknowledged in the designation of the 1960s as the United Nations Development Decade; yet unless the present trend is reversed, the decade will end with a greater disparity between rich and poor nations than it began. The Geneva project is an earnest of the rich nations' willingness to help, up to a point. It also gives practical expression to what for most people in the rich nations is only a vague ideal. And it is organised on a grand enough scale—a hundred countries are represented, 1,800 technical papers are to be read, and the whole is dignified with the name of the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas. Yet can such a conference give significant help? Or does it disguise the inability of governments to grapple with a task so huge?

The Geneva meeting is an exercise in communications, but communications are not the problem. The disparity between rich and poor nations does not lie in the quantity of scientific knowledge possessed (this is already international, and many agencies exist to spread it) but in the means of applying it. Enthusiasm and good ideas so readily evaporate amid the poverty and illiteracy of Africa and Asia. A scientist in the bush may be worth two in Geneva, but a scientist can accomplish little by himself. He needs people around him who, though not scientists themselves, can use the scientific tools he devises and understand why they are doing it—they might be called sub-experts. African and Asian countries are, of course, producing such people in ever-increasing numbers. But they have not enough, and may never have enough if they rely only on their own resources. Disease does not keep down the population as it did when Europe was treading this path.

In providing help at the sub-expert level, no better schemes have been devised than the American Peace Corps and the British Voluntary Service Overseas. VSO enables young people to do valuable work abroad for a short spell before choosing their careers, at a time when they often prefer to rough it and do not expect the high pay their established parents would need. The Government could probably do more good to the undeveloped countries of the Commonwealth by helping to foster the idea of VSO as "the done thing" than by offering scientific advice which it is beyond the power of the countries to receive.

I walk back toward the hotel and ask a young man just where it is. He walks along with me. I ask him if he knows where I can get a good beret and he takes me to the store. I also get some fruit and cookies.

In my room I sew up my coat pocket and sort out my papers. Then I discover that I gave the USIA press man the long version rather than the short version of my speech. I call and apologize but he assures me that he got hold of a copy of the short version and that everything is all right. It is already on the press wires. Curiously this young man is Hal W. Vaughan, a classmate of Robert L. Kellogg at Hyattsville High School.

I have dinner again at the hotel but it seems a bit expensive and unfriendly so I will look for another place where the waiters are better.

I read the papers for the sessions I must attend tomorrow and write out notes for a statement on shifting cultivation.

I am to bed at 10:15. But then I'm awake again at 11:30 for over an hour. I don't know what causes this. I have no pain and no worries. I guess my biological time clock adjusts itself more slowly than in years past.

February 6: This morning on the way to breakfast I find in my box an invitation to the British reception held last evening!

At 8:00 I am at the Annex for the delegation meeting. These meetings are a bit dull and repetitious. We could do more good at the Palais.

I go into the session on Irrigation and Water. Mr. Kettani of Iraq is an excellent chairman but the secretary, Mr. Garnier of FAO, speaks too fast and too long. And he is a bit mixed up. He has high praise for Hagan. He leaves out the soil aspect completely. He suggests some sort of regional experimental stations but then says he favors local ones. He says teams should be made up of people having the same language and having had previous experience working together. (But he doesn't say how they get started!) (I get a very poor opinion of this fellow. Later I ask Aubert about him and he says that he was a good man at one time at least.) Then R. M. Hagan of the US speaks. He lists the causes of failures of irrigation but omits the two most important ones just as the secretary had: (a) projects on soils unsuitable for irrigation and (b) wrong design of irrigation for the local kind of soil.

Davies of Sierra Leone does much better. He emphasizes the importance of soils and the need for simple systems.

Zahidov of the USSR speaks and is the first to mention the necessity of soil surveys.

Art Mosher of the US makes a good point about soil surveys and other material for planning irrigation. Others stress the need for cheap designs and the conflicts between the need for haste in development and adequate planning time. As the session ends I go after Garnier and Hagan just to stir up the animals. I tell them that I gather they were irrigating glass beads.

I go to lunch and then down to look at the exhibits of books. The US one is only fairly good. Why in the world it was done I'll never know, but the State Department gave the University of Pittsburgh (sic) the contract to select the books and print the catalog. Although they included a few good books in agriculture the selection as a whole is poor. The French have a good exhibit, and the UK one is by far the best. Besides books, it includes the current issue of all of the important British technical journals. They also have an excellent give-away pamphlet on fertilizers.

Then to the session on Soil Science and Soil Surveys with Academician Gerasimov in the chair. In the beginning he draws attention to my excellent speech yesterday! He stresses the need for much greater emphasis on tropical soils and the need for soil scientists to help with social and agrarian reform and with the other technical services.

Dr. Ignatieff gives an excellent and scholarly report that summarizes the papers and fills in the niches. (He uses all the material I sent him in December.)

Several of the speakers are just so-so. Ignatieff had already told me that the boy from Thailand didn't know that he was supposed to speak until he got to Geneva and he fixed something up with him. It is hard to stay awake.

Walter Russell of the UK and Christian of Australia seem to take a dim view of soil surveys and argue against the reliability of transfers of technical information through the method of geographic correlation! (It is clear now that Ignatieff scheduled them before me for a reason so I am busily rewriting my little speech to take the both of them on along with some side remarks on the irrigation of glass beads this morning.) (Some of the invective is omitted from the version included with these notes.)

After the meeting, I tell both Russell and Christian that they have never seen a first-class soil survey in their own countries - that is, one that includes full interpretations. Which is the truth.

Gerasimov does a fine job of summarizing the meeting. He insists that Aubert and I go with him to the press conference, which was soon over.

Dr. and Mrs. Ignatieff and I go together to the Swiss reception and I take them to dinner to La Bergerie.

Back to the hotel at 10:00 p.m. very tired.

LE CONSEIL FÉDÉRAL SUISSE,
LE CONSEIL D'ÉTAT
DE LA RÉPUBLIQUE ET CANTON DE GENÈVE
ET
LE CONSEIL ADMINISTRATIF DE LA VILLE DE GENÈVE

VOUS PRIENT
DE LEUR FAIRE L'HONNEUR D'ASSISTER, LE MERCREDI 6 FÉVRIER 1963,
À 18 H. 30, À LA RÉCEPTION QU'ILS OFFRENT AU GRAND CASINO, À
L'OCCASION DE LA CONFÉRENCE DES NATIONS UNIES SUR L'APPLICATION
DE LA SCIENCE ET DE LA TECHNIQUE DANS L'INTÉRÊT DES RÉGIONS
PEU DÉVELOPPÉES.

ENTRÉE: QUAI DU MONT-BLANC 19

CETTE CARTE, QUI DOIT ÊTRE PRÉSENTÉE À L'ENTRÉE N'EST VALABLE
QUE POUR UNE SEULE PERSONNE.

Rutten

Глава делегации СССР на Конференции ООН
по науке и технике

академик Е. К. Федоров

просит

Kellerg

пожаловать на прием, который состоится

в ^{7³⁰} час. — февраля 1963 г.

Avenue de la Paix 5.

February 11, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Irrigation and Water Use - C. 3.2

I attended this meeting, which went quite well except that neither the Secretary of the session nor the speakers said much about the importance of soil study and of soil maps for planning irrigation. This amazed me considerably but later Mr. Hagan spoke briefly about this omission in the following session on Soil Science and Surveys.

SOIL SCIENCE AND SOIL SURVEYS

ITEM: C.3.1

Wednesday, February 6, 1963
Charles E. Kellogg

Mr. Chairman:

I should like to emphasize the relation of soil surveys to systems of agricultural development. And by the term "soil survey", I include the associated biological and climatic factors that interact with soils.

First, schematic soil surveys of small scale, 1:100,000 to 1:1,000,000, have a place in discovering what areas are promising of development and for setting priorities. (Soil maps on scales smaller than this, certainly any smaller than 1:2,500,000, are useful only to people well trained in general soil science).

Dr. Russell of the United Kingdom has mentioned the use of air photo interpretation in making soil surveys. Such photographs are very useful as a base but not reliable for drawings of boundaries or for identifying kinds of soil without detailed field examinations of the soils in depth. The vegetation boundaries that show on the photographs can be quite misleading since the relations of soils to wild vegetation are quite different from the relations of soils to food and industrial crops. It would be wonderful if some scheme could be worked out for mapping soils without the work of digging holes and of making detailed soil descriptions. But all the attempts to do this that have come to my notice have been unsuccessful in producing useful soil maps with prediction value.

Secondly, detailed soil surveys on scales of 1:1,000 up to 1:20,000 are needed to pinpoint the application of the combinations of soil improvements and soil management practices that apply to the individual kinds of soil. Of course, any soil survey has to be designed for its specific purpose. The scale of the map, the cartographic detail, and the cost depend upon the intensity of the proposed agriculture or forestry that the soil map is made to guide. Cost per hectare do and should vary widely. There is a closer relationship between the cost of the survey and the investments to be made than to undefined hectares.

Soil surveys must be interpreted according to the reasonable alternatives for use in management from among which selections can be made by the cultivator. This process of interpretation commonly goes through several steps:

(1) Geographic correlation of the local kinds of soil within the area with identical or closely similar kinds of soil elsewhere that have already been studied and cultivated under modern practices is enormously useful. Here I differ greatly with Mr. Christian of Australia and Dr. Russell of the United Kingdom. The method of geographic correlation is one of the most important methods used by general soil scientists. But to make the method work one must have accurate, detailed soil descriptions to which the interpretations to be transferred are closely related. Nor is the method easy. But it is the most important method for summarizing what we have learned

about soils and their responses to management and for transferring this knowledge to areas of like soils where little or no previous experimental data or modern farm experiences are available. For example, in my own experience I have been able to make use of many of the results of the excellent research work done by the INEAC in the Republic of the Congo in other continents.

(2) A study of the soil characteristics of each kind of soil in the local area in relation to previous experience gained through basic research on similar combinations of soil characteristics gives good leads.

(3) Careful observation of yields and effects on the soil of described kinds of current practices to be observed within the area are important, especially in remote populated areas. I should say that this method is especially important in areas of traditional shifting cultivation and mixed cultures. These practices of primitive people are often quite good even though a soil scientist cannot find the reasons why they are good immediately.

(4) Exploratory plots on cultivators' fields with simple combinations to learn at least the general potentiality of fertilization, mechanical treatment, water control, and kinds and varieties of crops, including tree crops are very useful.

(5) Long-time experiments are essential for studying the basic interactions among soil characteristics and practices and for the standardization of chemical tests for guiding applications

of lime and fertilizer. But these are not useful unless they are laid out on representative examples of important known and described soils, and with proper replication and randomization of plots.

(6) Foliar tests on growing plants can be used if standardized for the different soils and kinds of plants and are not confused with the effects of insects, diseases, hot winds, drought, etc.

As Dr. Ignatieff's report states, the whole of this makes a system. No single phase of this system can stand alone as a reliable means of giving cultivators safe recommendations of alternatives from which they can choose. Depending on many factors, the treatments used to produce an arable soil may be relatively simple or very complex and drastic.

cc:

Dr. J. A. Rigney, Science Secretary

Dr. V. Igantieff (Room A.581, Palais des Nations).

February 7, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Soil Science and Soil Surveys - C.3.1 - 6 February

Most of the delegates who had a chance to speak or to talk with me privately emphasized the need of soil surveys for guiding agricultural development. Dr. Russell of the United Kingdom and Mr. Christian of Australia were unenthusiastic. I think the reason for this is that in both countries soil surveys have been conducted apart from soil management work and generally have been poorly designed with little interpretation. This I stressed in my intervention. Of course, there are areas where quite good agriculture has developed without soil surveys but even though good, it is far less than its potential in most places that have had an opportunity to study.

The Irish leaders are quite anxious for me to come to Ireland, possibly to show me how good the work is that they are doing rather than to get aid. No specific proposals have been made to me yet from the underdeveloped countries but I am sure that many requests will continue to be made, both to the United States, including foundations, and to the FAO.

I shouldn't say that the session brought out any new developments but did underscore a great importance of integrating the soil survey work with soil management research, advisory services, irrigation schemes, and demonstrations for cultivators. These needs are becoming increasingly recognized in all the Asian countries, in most of the African countries, and in most of the Latin American countries.

I can honestly state that United States prestige in this area is very high. Our manuals and other guides published by the United States Department of Agriculture are widely used and are recognized as standard in more than half the countries represented in the United Nations.

Up to the present I noted no particular criticisms of United States policy in this field except that we have not made available from either the Department or the colleges our most skillful soil scientists for this work with a few exceptions.

Certainly we shall have many requests for training soil scientists from other countries. My own view is that it will be even more

helpful to help them establish good research and educational institutes in their own countries. It is exceedingly difficult to arrange demonstrations of diagnosis of field problems within the United States that are meaningful to young men from tropical areas.

The Secretary of the session, Dr. V. Ignatieff, had done a most excellent job of summarizing the many contributions into a useful document. Really not very much was added by the discussion leaders and other speakers although several did give specific examples of the application of basic principles within their own countries.

The Chairman, Academician U. P. Gerasimov, of the Soviet Union, did a good job. He conducted the meeting very fairly and made as good a summary as possible under the circumstances.

After the meeting Academician Gerasimov invited Professor Aubert of France and me to attend the press conference along with the Secretaries. He made a summary to the press people and called upon both Professor Aubert and me to make brief statements. There were, however, no questions from the reporters, perhaps partly because there were no political fireworks.

February 7: No sleep this morning after 2:00 a.m. I waited too long to take a sleeping pill. I go to the delegation meeting in the Annex and the boys give me copies of photos they took while I was speaking on Tuesday.

Then at the Gatt building I dictate a revised copy of yesterday's speech and a report on the meetings. I go to the Swissair office and get my tickets to Brussels. From there I walk to an Omega store and buy Mommy a wrist watch and leave mine to be cleaned.

I'm back to the hotel at noon, write Mommy about her watch, take a bus to the Palais, and get my lunch in the cafeteria.

The Xerox Company has a big exhibit and agrees to make a copy of any book on display. I give them two titles and they show me the scheme. It is almost magic. (Added later: This scheme is surely a violation of copyright laws and the British refuse to allow any of their books to be copied but later I get an example of a WHO book on composting.)

I meet a young man who is an assistant to Wiesner. He says he hopes to set up a scheme for people on our delegation to answer questions that people have. The sessions are so formal that there is little opportunity to do this. (Added later: Such a letter was sent by the head of our delegation to all others and I did have

a few requests and some special meetings.)

I go into the special session arranged to discuss the Irrigation and Drainage Problem of Pakistan. This had been billed as a short question-and-answer session. Kovda speaks first. He takes an hour. Then a Pakastani speaks for 35 minutes. He is followed by Roger Revelle of the US delegation, the great over-night specialist who was saved from utter absurdity last year by Charles Bower of the USDA. He talks convincingly about the agricultural phases that Bower has trained him in and then he keeps on for a bit more than an hour.

I just can't take any more of it so I go to Ignatieff's office. We chat awhile. Florence comes in and I take them to the reception of the United States delegation on the 8th Floor. Here I get many kind words about my speech on Tuesday.

We go into the city and have a light supper. The Ignatieffs come to the hotel to inspect the watch I bought yesterday.

I am in bed about 10:30 and go to sleep but I'm awakened at 11:30 and again at 12:00 by a woman telling me that the delegation meets at 7:30 in the morning. There must be a fire.

invitation to the Soviet reception. In this will be a busy evening. The Canadian reception, the Soviet reception, and a dinner at the home where I am one of the hosts and have two guests - Ignatieff and Montclair.

February 8: I am up about 6:30 and get over to the Board room of the Annex at 7:30. No one is about except the cleaning women and the guard. The chairman comes in at 8:00 and says there is no such conference. So who called me and why?

Dr. McDermott is very generous about my Tuesday speech.

I plan a tea at 4:00 p.m. Sunday at the Hotel du Rhone for soil scientists and then go to the Palais.

The girls at the Gatt were to send my dictation to the Palais office but they didn't.

I step into the general session on Organization, Planning, and Programming for Economic Development.

M. Massé¹ of France speaks very well in describing the French system. S. R. Sen of India speaks very well.

The Soviet speaker says that in their planning a very high priority is given to agriculture! On this note of falsehood I leave and try to trace down the dictation I gave yesterday but without any luck.

I have lunch in the cafeteria with Ripley, Walter Russell, and Ignatieff. Just as we finish Tavernier and Laudelout come in so I remain at the table and talk with them.

As I go back up the hall Gerasimov gives me an invitation to the Soviet reception. So this will be a busy evening: The Canadian reception, the Soviet reception, and a dinner at the Rhone where I am one of the hosts and have two guests - Ignatieff and Montrakul.



CEK, writing in notebook, during a general session of UNCSAT.
Dr. Walsh McDermott, Chairman, U. S. Delegation, right front.



Mr. Peter Smithers, M. P.

Joint Parliamentary Under Secretary of State for Foreign Affairs

Sir William Slater

*Leader of the United Kingdom Delegation
to the U. N. Conference on Science and Technology
request the honour of the company of*

Mr. Kellogg

*at a Reception on Tuesday February 5th 1963
at the Restaurant at the Palais des Nations, Geneva*

Cocktails

18.30 - 20.00 hours

R. S. V. P.

Col. 32 64 80 - Poste 9



The Canadian Delegation

to the

U. N. Conference on Science and Technology

requests the honour of your company

at a reception

on Tuesday, February 8, 1963

at Hotel de la Ville

regrets only

R. S. V. P.

32.19-85

6:30-8:30 p.m.

I go over the statement that Tavernier will use in presenting me for the D. Sc. at Ghent. I agree to get my ticket changed so that Jurion can meet me and take me to Ghent Saturday morning.

I go into the general session on the Training of Scientific and Technical Personnel. René Maheu of UNESCO speaks well.

After the session I hurry back to the hotel with Tavernier and change. Then to the Hotel de la Paix for the Canadian reception. I am told that Quebec has had a Government commission on agricultural colleges and is reorganizing the whole system. Then by taxi to the Soviet reception, which is very pleasant, with my Belgian friends. Then back to the hotel at 8:30 for the special dinner. While they are having their fish I have my soup. Then by skipping the fish I come out even.

Dr. Stakman acts as Master of Ceremonies and keeps things fairly lively although it is almost a monologue. We are about 25 and with some five or six Americans.

Late to bed.

February 8: I am up at 6:30 AM. I take
pills. Breakfast and on the way to the
Then I go to the Palais and
on laterite, which the bureaucrats



Academician Gerasimov, CEK, and Professor R. Tavernier
at the Soviet Reception, February 8, 1963

February 9: I am up at 7:30 after three sleeping pills. Breakfast and to the delegation meeting.

Then I go to the Palais and retrieve the bulletins on laterite, which the bureaucratic people at the American exhibit would not display. I hand them out to interested individuals.

I go to the session on the Agricultural Problems of Regions of Low Rainfall and of those of Shifting Cultivation. The papers had been grouped into those about semi-arid regions and those about humid regions. The secretary for the session gives an indifferent summary that includes this tid bit: A suggestion that the organic matter accumulated under shelterbelts be used as soil mulch.

Mr. Jorge Molina (Argentina) describes conditions in his own country. He advocates systems that include direct pasturing for the whole year. Under wheat culture he advocates stubble mulch and crops of rye and maize for green fodder in rotation. Wheat yields are higher with fallow, but it is not clear whether the maize and rye are grown on the fallow land. He says that where soil blowing is not serious they have overcome the problem of drought. (But he fails to mention the very large acreage of productive soil per owner-operator.)

Professor C. M. Donald (Australia) says that "good land use" gives the greatest happiness on a longtime basis to the local inhabitants. He says that it is very hard for an expert to go to another country to advise on land use. He makes the absurd remark that "land-use technical assistance depends little on advance training." (Of course, if done well it requires a great deal. This makes one suspect his.)

He says he differs from Molina. Wheat in rotation with bare fallow yields more but reduces fertility more than wheat every year. (I suppose on every kind of soil!) Bare fallow not only allows water to accumulate but also nitrates from the organic matter. He advocates alfalfa or subterranean clover where rainfall is adequate but says little about chemical fertilizers. But later he gets on ground more familiar to him and gives a good textbook explanation of rotations.

Dr. E. Walter Russell (United Kingdom) makes the old suggestion of planting pasture in place of bush fallow under shifting cultivation but gives no specific suggestions for the humid tropics. Then he admits that the ash of one to two tons of manure per acre give as good results as the manure itself. He says that few soils in East Africa are phosphorus fixers. He says that short-season maize does better than long-season maize, and that grain sorghum is

best of all. But in wet seasons long-season maize gives the highest yields. Cultivators are shifting to this because they can count on cheap American food if the season is dry! Thus US food policy leads to poor land use in East Africa!

Gerasimov (USSR) points out that the problems of low-rainfall areas have come up in many sessions and the papers should be summarized together.

Talmon (Israel) goes out of his way to support a speaker from UAR.

Another delegate from the UAR advocates "spotted" farming to use stored runoff water. (This has some merit but he does not explain it.) He says that many of the new countries prefer help from the UN agencies because they are suspicious of "the former colonizers."

Several other people speak. Victor Kovda gives a very long propaganda speech for the work in UNESCO of the kind that I feel should be transferred to FAO.

My own speech on shifting cultivation seems to go quite well. (Brief digest attached.) This is supported by Laudelout of Belgium who makes the point that the systems are not so primitive as some think and that good systems are refined balances among soils, plants, and people. He thinks that the upper limit for good shifting cultivation in Central Africa is 25 people per square kilometer.

H. C. Pereira (United Kingdom) says that the actual number of trained scientists and engineers in Africa has gone down each year for some time.

Georges Aubert (France) says that in the French Union parts of Africa they have an increasing number of good young students.

Victor Kovda takes me to lunch at the Eden Hotel. He tells me that he has not yet received the names of the American authors for the Irrigation and Drainage book. I had thought that this matter had been cleared up long ago.

I am back to the Palais about 3:20 to a special session for speakers from the newly developing countries. This was heralded as their opportunity to gripe. The president of the Conference, Mr. Thacker of India, so loves to talk in platitudes that he wastes a good deal of the time.

The delegate from Pakistan makes the absurd suggestion of a new UN agency for the application of science and technology. He also suggests that existing UN agencies should be strengthened and coordinated! Then the president gives another speech like the first one. This session goes badly so far as I can see.

I have a bit of tea with some of the Belgians and go to the Gatt building. I dictate today's proceedings and walk to the hotel. Tavernier and I have dinner together and a nice chat.

SHIFTING CULTIVATION

C. 3. 4

February 9, 1963

Charles E. Kellogg

Although much has been written about shifting cultivation, little basic research has been done - relative to the size of the problem and the number of people involved - on how the natural fallow actually functions to improve soil productivity as well as it does.

Certainly several factors play a part not necessarily in all kinds of soil at once.

1. Most important generally, the plants immobilize nutrients, released by fire and rapid decay.
2. Near the margins of hardening, a partial tree cover protects the doughy laterite from becoming hard.
3. The rapid growth of the underground parts of young trees give(s a kind of "natural tillage" that lowers bulk density and increases water intake.
4. On the margin of poor drainage trees reduce waterlogging and salinity.
5. Fire tends to reduce certain pests of crops, such as wireworms of potatoes.
6. Periods of shade in the Tropics seem to favor nitrogen fixation, at least on some soils.

Certainly this list is not complete. Scientists have two important tasks: (1) Find out how the various systems work; and (2) help introduce improvements that are acceptable to the cultivators, such as pelletized fertilizers, improved kinds and varieties of crops, small irrigation improvements in favored places, and so on. I agree with the opportunities of mixed cultures, of trees, palms, bananas, manioc, etc. But changes to mixed farming with pastures will be very difficult in many places.

Machinery can be useful, where available, to substitute partly for fire.

Shifting cultivation is a very serious problem partly because of increasing health services without parallel programs in education and agriculture.

The worst that we can do is to cry against the systems of shifting cultivation until we can make constructive suggestions based on study and test of alternatives. One wonders why cultivators receive great credit from growing certain plants to enrich the soil and great blame for using trees for the same purpose when this is the most economic use of the trees.

186
February 9, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Report on Special Session Soil Management Under Low Rainfall and Shifting Cultivation. Agenda Items C.3.3., C.3.4., and C. 4.3

On the whole, this session went quite well. The Chairman was Professor S. Huritz (Israel). The secretary was Dr. A. B. Fagundos of FAO.

The secretary made a brief but an excellent summary.

Mr. Jorge Molina (Argentina) described practices in his country. He advocated direct pasturing for the whole year. For wheat culture, he recommended stubble mulch and rotation crops of rye and maize as green fodder. With fallowing, they have good results where soil blowing is not serious. He says they "have overcome the problems of drought" (but he failed to mention the large acreage per family). And it is not clear whether the green crops are grown on the fallow.

Professor C. M. Donald (Australia) makes a curious statement that well-trained experts are useful in technical fields like plant breeding but not in land-use planning!!! He says that in Australia wheat and bare fallow give high yields but reduce soil fertility of the soil more than wheat everywhere. He points out that bare fallow not only stored water but also allows nitrate accumulation from organic matter. Then he goes ahead and recommends wheat in rotation with subterranean clover or alfalfa. Of course, this will only work in sub-humid to sub-humid areas. Then he goes ahead and gives an adequate textbook explanation of the use of rotations involving legumes and/or chemical nitrogen.

Dr. E. Walter Russell (UK). He **repeats** the old British idea of establishing pasture to replace the bush under shifting cultivation. (This would be fine but only in a few places can it be done). He also emphasizes organic matter and farmyard manure but admits that the data show that the ash from the manure gives as good a result as the manure itself, even one to two tons per acre. (He suggests that all the soils of East Africa are deficient in phosphates and that this explains the effect of the manure.) He says that only a few soils in East Africa are fixers of phosphate.

He says now that maize is replacing sorghum and, of course, they have more crop failures. Short-season maize yields better than long-season maize in dry years. But, generally sorghum is best since most years are dry. Then he makes this curious statement: "The shift of crops to those that give high yields in wet years is because the United States will furnish cheap famine relief if the years are dry and the crops fail."

Academician Gerasimov (USSR) tells how the problems of low rainfall areas had come up in many of our sessions. He recommends that this material be summarized in some one place. He points out that the mechanized methods used in Canada, the USSR, Australia, and USA., cannot now be transferred to the dry tropical areas.

A delegate of Spain emphasizes the need for closer cooperation on the problem of low rainfall areas through a special committee or a section of an existing international agency. (If this is done, it should by all means be FAO).

Szabolcsi (Hungary) discusses the physical properties of soils and the bad effects of hardpans that reduce root growth and water storage.

The delegate Talmon (?) (Israel) goes out of his way to agree with a delegate from the UAR! His talk is general and repetitious of other and better speakers.

Dr. M. M. el Gabalz (UAR) talks without saying much except to suggest more irrigation in dry areas. He also suggests "spotted" farming to use stored runoff water. (This is a practical scheme in Lybia I know.)

Then he emphasizes the following: "People in underdeveloped countries are suspicious of the former colonizers and so prefer to have assistance from the UN agencies."

A delegate (Bucklow?) (France) points out successes with hydroponics in the southern part of Algeria.

Y. Admoni (Israel) talks about the size of the family farm unit and so on with nothing new.

Professor Victor Kovda (USSR-UNESCO) suggests four years of cotton and two or three years of alfalfa under irrigation to avoid plow pans and so forth. He recites the well-known Soviet experience in his usual slow and wordy manner.

Then he issues strong suggestions for more agricultural technical assistance by UNESCO. (Personally, I am much opposed to dividing the agriculture field between FAO and UNESCO. There is no reason why the Soviet can't join FAO and stop making an agriculture agency out of UNESCO.)

The delegate from Argentina tells about the bad effects of the cultivation of hill land after cutting trees.

Kellogg of the USA gives a short lecture on shifting cultivation. (This is available in your files except for some additions made in response to earlier statements.)

Another delegate from Argentina makes a talk on the good results of alfalfa on soil structure, which was given in an earlier session also.

H. C. Pereira (UK) says that the actual number of trained scientists and engineers working in Africa, in agriculture, has gone down every year for sometime (I suppose that the biggest factor has been the removal of hundreds of first-class Belgians from the Republic of the Congo, as well as the dissatisfaction of many British nationals who formerly worked in Ghana and other African territories).

Professor Aubert (France) says that there are now more young men working in the newly developing countries of the French Union than formerly. (I think he must refer to the countries South of the Sahara.) He also says that his office, ORSTROM, is doing a great deal of research on crop rotations for the humid tropics.

Professor Henri Laudelout of Belgium makes a brief statement on shifting cultivation in which he mainly endorses the remarks made by Kellogg. He thinks that people are wrong to look upon shifting cultivation as wholly primitive. It is really a refined balance among people, soil, and vegetation. He thinks the upper limit on most soils for shifting cultivation is about 25 people per square kilometer. If the density goes much beyond that, the fallows are shortened, yields go down, and serious trouble can result.

February 10, (Sunday): I have a fair sleep last night and breakfast at 8:15. I write to Mommy and sort out my papers.

A press man was to come for an interview at 10:00. Since he does not show I go for a walk and tell the exchange I shall be back at 11:30.

I locate a few promising bookstores and then get temporarily lost.

I am back at the hotel at 11:00 and find a note from the press man, Lubin, that he will call at 11:30.

At 11:30 I go over to the Annex office and record for Joe Lubin on tape for about an hour. He says these will make fine shorts for the radio.

Then lunch at La Bergerie (the place of the sheep) with Dr. and Mrs. Ignatieff and René Tavernier.

Then I am back to the hotel with Tavernier for tea with some of the people that wanted to see me. Besides Dean Read of the US there are the following: Sorot Montrakul (Thailand), Ndiaye Abourahim (Senegal), and Sene Djibril (Senegal).

The first of the men from Senegal is in physics at Dakar and the second is an agronomist at Bambey. We talk until 7:00 about soil fertility and management problems and about education. The young men from Senegal say they have a most serious shortage of schools, especially teachers. About 75 percent of the town boys go to school

but only 25 percent of the country boys. Consideration is being given to national compulsory service for young people with education to serve as teachers. That is, they would do this for 18 months or so instead of army duty.

These men feel overwhelmed at this Conference. They think it too large. They think it should have been held in the tropics where the problems are. (I agree.)

Tavernier and I have dinner at La Bergerie. Again it is snowing as I walk back to the hotel.

February 11, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Special Meeting on Soils, Sunday, February 10, at 4:00 p.m., in Room 7, of the Hotel du Rhone

Present at the meeting were the following besides myself:

Mr. Ndiaye Abdou Rahim, Assistant Faculte de Science,
Dakar, Senegal

Mr. Sene Djibril, Ingenieur Agronome, C.R.A. de Bambey, Senegal.

Mr. Sarot Montrakun, Thailand.

Prof. Rene Tavernier, Belgium.

Dr. William H. Reed, USA.

Neither of the gentlemen from Senegal is a soil scientist. We talked about problems of fertilization, crop rotation, tillage, and organic matter. Also, in Senegal many of the soils are sandy and they have the problem of soil blowing.

Near the end of the meeting we discussed some of the problems of education for the cultivators. It is being proposed in Senegal that educated people be required to have about 18 to 24 months of "national service" something like service in the Army, in order to staff rural schools.

Our session lasted from 4 to 7:00 p.m., and I think it was useful although two others who had accepted our invitation were unable to come.

February 11: I go to the Annex for the delegation meeting in snow and slush. Rigney gives me a copy of my report on the shifting cultivation session, which was so badly typed that I could hardly recognize it. This I correct and return to Rigney for retyping. (Added later: And I failed to retain a copy! But Rigney digs one up for me.)

At the Palais I have a meeting with Dr. A. B. Fagundos and Dr. E. Malavolta of Brazil. Malavolta shows me a new book that he had just gotten published by the International Potash Institute on the mineral nutrition of some tropical crops. At their request I agree to act as chairman of a special session on "Simple methods for determining fertilizer needs in tropical countries." Sir William Slater and Philips approve this for next Thursday at 10:00 a.m.

I look over Dr. Ignatieff's final report and make a few minor suggestions. After lunch with Ignatieff and Tavernier I go to the Xerox room and find that the books I wanted reproduced can't be had.

I get a bus to the Gatt building and dictate a couple of memos for Rigney and walk back to the hotel in the slush and drizzle.

I go to the bookstores that I located Sunday and get a first of the Exiles by Joyce in good condition for 30 francs. Although I walk and walk and enter many bookstores

I find nothing else. I buy a shirt to have a clean one for Ghent.

Back at the hotel I work up an outline for the special session I agree to chair. After dinner I read and write and am early to bed for a change.

This morning I met Dr. E. Malenbits of the Delegation from Brazil. A few moments later he was joined by Dr. A. B. Fagundes of SAC, and working here with Dr. Phillips. They were anxious to have a special session on "Simple Methods for Determining the Rock-Clear Status of Tropical Soils." They intended that I serve as Chairman of this meeting. They wanted Mary and I finally agreed. Dr. Fagundes immediately prepared the appropriate request which was approved by Mr. William Kiser and Dr. Phillips. The meeting is scheduled for Thursday, February 14, at 10:00 a.m., in Room 1-102.

February 11, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Special Session on Agriculture

This morning I met Dr. E. Malavolta of the Delegation from Brazil. A few moments later he was joined by Dr. A. B. Fagundos of FAO, and working here with Dr. Phillips. They were anxious to have a special session on "Simple Methods for Determining the Fertilizer Needs of Tropical Soils." They insisted that I serve as Chairman of this meeting. They pushed very hard and I finally agreed. Dr. Fagundos immediately prepared the appropriate request which was approved by Sir William Slater and Dr. Phillips. The meeting is scheduled for Thursday, February 14, at 10:00 a.m., in Room A-302.

February 12: Last night I had a good sleep. I am told that J. S. Molina of Argentina wants to see me.

I stop at the Gatt building and write letters to Molina and Tae Sang Won of Korea who said they wanted to see me. And I have my Ghent speech typed on small cards. I also dictate a general memorandum to Rigney for his report.

About 10:20 I go out to the Palais and spend some time with the exhibits. I have lunch in the cafeteria and find three Belgians - Professor Staner; Mr. Drapier, head of the delegation; and Mr. Van Zeeland, a young man in the Cabinet of the Minister of Foreign Affairs. I really lay it on to them because my dear friend, F. Jurion, is not here. I press them quite hard in the hopes that it will get into their report. I explain that it is generally recognized in many delegations that Jurion is the best tropical agriculturist in the world.

Back from lunch an American from Turkey talks to me about the possibility of treating a high-silica phosphate with sulphuric acid and adding this solution to the irrigation water. I pass this one up and tell him to write to Dr. Lewis B. Nelson of TVA.

Then I get the bus at 2:00 for a meeting in Gatt at 2:30 called by the top information officer of the delegation. All but one of us in agriculture are there but he doesn't show!

(Anyway, who cares about agriculture?). So I go back to the hotel, get my tickets, and go to the Sabena office to change my reservation from the evening flight on Friday to the noon flight.

Then back to the hotel and look over a book given to me on the agriculture of Korea and another on composting.

Dr. J. S. Molina of the Argentine delegation calls at 4:30. I had been told that he wanted to see me and suggested this time. He said that he didn't ask to see me but he came anyway and we had a pleasant chat. (But probably the chief of his delegation put his name in.) He is a microbiologist he says but he works as a special agent on farm-management planning for about a dozen farms in the Pampas that average about 4,000 to 5,000 hectares each. They have grain sorghum, maize, and wheat in the spring and summer with rye for pasture in the winter. He says the big technical problem is water management. Some farms are only 30 hectares and the minimum should be about 100. But, he says, the size of the farm depends on the skill of the man! (I'll bet it depends mostly on who his grandfather was!) He says that industry in Argentina is very inefficient so they must raise cattle for export to make up for it.

I speak to Hal Vaughan about some smaller prints of the photo they took of me at the general session. He says the negatives are already back in Washington in the USIA.

I sort out some papers and take Mommy's watch down to the hotel safe.

Dinner again with Tavernier at La Bergerie.

February 12, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

General Impressions

Most of the members of other delegations with whom I've talked - from both advanced and tropical countries - have expressed the following thoughts:

1. The conference is too large.
2. The conference is too formal. Many from the small countries can make no statement that will be recorded without advanced approval from their governments.
3. Because of nepotism, or other reasons, the real workers, especially agricultural scientists, were not selected. For example, Ghana has two people interested in nuclear reactors but no one in soil science or other aspects of agriculture, which is their basic source of income for economic growth.
4. Too many from the advanced countries have had little direct experience in tropical countries outside the cities - with the actual countryside and the mass of the people who live on the land in villages.
5. They propose small conferences, say, limited to agriculture, which is itself quite broad, to be held in the tropics with a little time in the field. Several cities could handle fairly large meetings - Dakar, New Delhi, Bangkok, etc. Of course, the people in some of these areas would require assistance, perhaps from FAO and by selected persons with experience in the tropics from the advanced countries, to help with the planning, including a limited number of field demonstrations. These could include: (a) Irrigation planning; consolidation of fragmented holdings; advisory work in the field; various sorts of field, village, or farm demonstrations; shifting cultivation; water-control with irrigation, drainage, and terraces, or a combination; fertilizer experiments; variety trials; crop protection; improved livestock; special equipment; cooperatives; and so on; (b) besides international conferences, many suggest that regional meetings would be better attended by local agricultural scientists, perhaps with specialized sessions and several mixed

sessions. (On this point I have mixed feelings. Once we include soil scientists and agronomists or economists together, for example, discussions must be "watered down." Certainly I should want some on soil science alone.) Yet the work of each specialist in agriculture is related to that of every other one. And the potential in agriculture depends increasingly on what happens in the non-agricultural sectors.

7. Much interest is expressed in how to teach the basic principles of soil science and other agricultural specialties at all levels.

The Guardian 12 Feb 1963

To the unknown Nicaraguan

At Geneva in the past ten days words in their scores of millions have achieved mastery over man. And there is worse to come. Not for another week will the flood of words let up. By a cruel irony the rout has been heaviest among the humble Latin Americans, the trusting Afro-Asians, who went to Geneva looking for new words, thinking that words were their allies. The occasion was the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas—a title which itself gave hostages to fortune. The intention was for the advanced nations to distil their technological knowledge into 1,800 papers and let the less advanced take their fill. Agriculture, health, transport, human resources—in the twelve sections of the conference no department of national affairs was to be left unadvised upon.

Many hundreds of technologists and bureaucrats turned up to give the advice, but the recipients were there in ones and twos to receive it. Half the Latin-American countries sent one man each who now has the task of assimilating and then of putting into practice everything he has been told. And he has been told, for instance, that in 7,000 years the layers of human population will lie so thickly on one another that future generations will shoot into the atmosphere at the speed of light. It requires quite an effort by most of us to visualise such a society; it is asking a lot for one man to draw up proposals for his Government to deal with it. And when he has done so there are 1,799 papers to be tackled, from soil chemistry to signalling equipment, from higher education to pesticides, from the protein in beans to the influence of bank rate on growth. His only comfort will be that no previous conference on the Less Developed Areas has been of such benefit to so many scientists and technologists.

February 13: I am up about 5:30, read, and write to Mommy. After breakfast to the delegation conference. Another Congressman comes in - Davis of Georgia.

As these meetings go on I am getting more and more irritated with the lack of appreciation of agriculture in nearly all delegations.

We are told that Ambassador de Castro of Brazil is trying to get scientists to sign a resolution urging disarmament and the use of the funds for technical assistance. Officials of the United States Government cannot sign but others can.

We are told that the big list of papers and a printed set of the American papers are being sent to our homes. We are told that we can order individual papers from the UN in New York.

Then to the Palais and the general session on International Cooperation and Problems of Transfer and Adaptation. Frank M. Coffin, Deputy Administrator for Operations, AID speaks beautifully but I disagree with practically everything he says. He talks about the need for generalists, especially economists, who can "work across the board" like the village-level workers in India! Obviously, he knows nothing about India. (Added later: I got his original paper from the documents section and it contains no such nonsense. I spoke with Elmer Starch about this and he told me that the two speeches were prepared for him by different people!)

Professor Jean Paul Harroy of Belgium tells me that Sir William Slater has approved a meeting next Monday on Conservation. I am to speak for five to ten minutes on soil conservation.

I take Dr. S. R. Sen of India to lunch. I ask him about the Ford program and he says it goes well in places. But elsewhere the package of services is not coordinated. I agree to write to Wayne Criddle and ask him to call on him. We have a very nice luncheon and a nice chat. (Added later: I wrote to Mr. Criddle. He replied that the Indian Government did not want him because he had been in Pakistan!)

I go to the first part of a special session on Planning. One of the papers by a UK delegate is very good but the documents section doesn't have it.

On the way back to the hotel I buy two music boxes with dancing dolls and send one to each granddaughter.

Then I change and go to the Italian party. They have a nice set of documents and agree to send one to our USDA library. I have a good talk here with Dr. Sen and Dr. M. S. Randharva, also of the Planning Commission of India, about my fears for the Soil Survey in India.

I talk for a few minutes with Oris Wells who is here for a day.

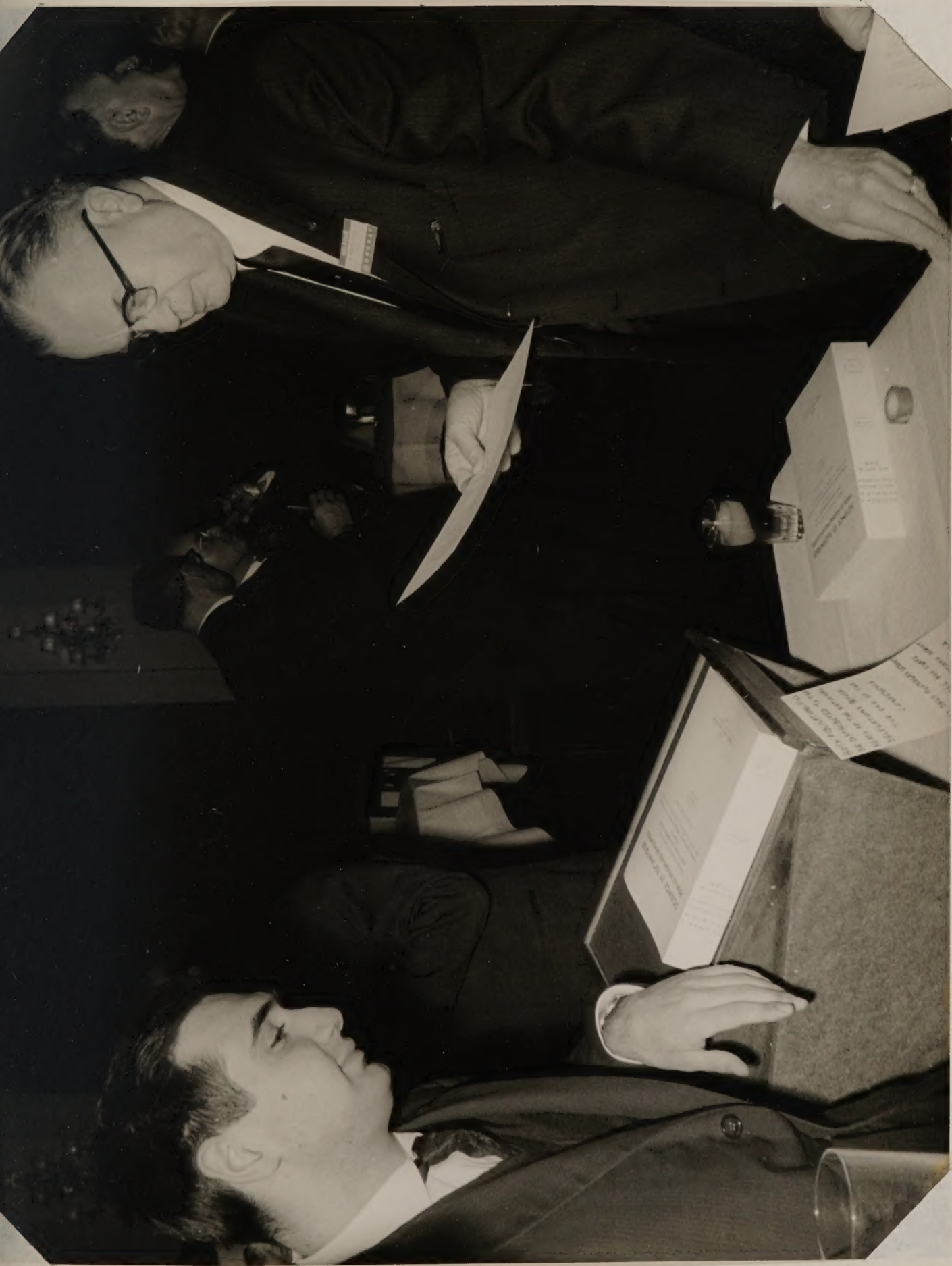
I have a late dinner at La Bergerie and soon to bed.

Dr. Charles Kellogg

552

La Délégation d'Italie

*à la Conférence des Nations Unies sur l'application
de la Science et de la Technique dans l'intérêt des
régions peu développées vous prie de lui faire
l'honneur d'assister à la réception qu'elle offrira
aux Chefs des Délégations le mercredi 13 février
1963, à 18 h. 30, à l'Hôtel des Bergues.*



CEK at the Italian Reception, looking over exhibits.

February 14: After breakfast I find that the Omega store had charged my hotel for cleaning the watch although I had paid in advance.

At the delegation meeting Harlan Cleveland fills us in on what he knows about the Congo after a visit of a day and a half. I suspect that the whole business is a waste of US funds but I don't know the alternatives.

We have some general discussion of the shape of the Conference and I agree that it would be better to have had more specialized conferences, perhaps agricultural on a regional basis.

At the close of the briefing session, Dr. Walsh McDermott explains that he has made a deal with the Soviets. He had discovered that they have frequent sessions with the delegates from the Holy See. He asked a Soviet delegate that if an agreement is in prospect to let him know so that he will have some lead time to join with one or the other. And the Soviet agreed!

After the session I stop at the Omega store to get the 25 francs off my hotel bill.

I ride out to the Palais in the little bus. Harrison Brown sits back of me talking in a loud voice. He is now Corresponding Secretary of the United States Academy. He suffers not from immodesty.

I go to room A-302 and chair the meeting on "Simple methods of determining fertilizer requirements in tropical countries."

To begin with, I summarize briefly the principal general methods:

1. Geographic correlation and transfer of suggestions from one known kind of soil to another. This is the best for an early estimate. But the work requires an experienced general soil scientist.

2. Exploratory or small-scale maps to start, with sample areas mapped in detail. These serve as a basis for training advisors in the recognition and description of local kinds of soils and how they may recognize them with the aid of the small-scale map and soil descriptions.

3. Exploratory plots with N, P, K, and others that our knowledge of the soil and the appearance of the crops suggest. Magnesium, iron, sulphur, zinc, boron, etc., must be considered.

4. Chemical tests if standardized locally or elsewhere (on the same kinds of soil) for the kinds of soil being studied.

5. Foliar appearance if not confused with effects of drought, disease, insects, frost, or wind.

6. Once we have a good idea of the universe, the exploratory plots can be made more nearly precise.

7. Longtime experiments for precision.

We have 14 persons and a good general discussion without set speeches. Most feel that at least some chemical testing

is necessary to supplement field study. Several agree that we should begin with the field correlation of the soils with known soils elsewhere and not start with the complete factorial analysis. As laboratory equipment becomes available and skilled people to operate it more detail can be had. Some emphasize the advantage of using adapted test crops that have well known responses to limiting nutrients. Several keep insisting that this whole problem is highly complicated and that there is no simple answer. I point out that for high precision this is undoubtedly true but that cultivators have been giving simple answers for a long time. Certainly skilled general soil scientists can improve on their answers short of the complete system used in the most advanced farming areas.

Just as we break up Mr. Won of Korea comes to see me. He apparently wanted to go to the irrigation meeting in our hotel. He said he called Room 7 several times but no one was there.

I have lunch with Dr. Kay of the UK and Dr. Tavernier.

Then I go to the US office in the Palais and write out a brief report on this morning's session which the girls agree to send down to Gatt for typing.

I attend the session on Research Planning this afternoon for awhile but it is not very interesting. I get some boxes at the Palais and return to the hotel. I wrap up some 20 odd copies of my paper and two or three books for mailing home.

Tavernier and I meet at La Bergerie about 7:20 and

have a nice dinner together. About 14 or 15 people were present. We had a good exchange of views about the problems.

I acted as Chairman. Dr. A. B. Tegueme of FAO acted as secretary for awhile, but did not leave. Dr. C. Malavolta of Brazil took notes and will send the detailed notes to the secretariat.

It was concluded that, among the objectives of supply oriented soil scientists, exploratory phase work is most important. Several stressed the importance of soil survey work.

The following were among those present to the session:

Dr. R. Tegueme, Fao
Prof. R. Staffer, Fao
Mr. St. George C. G. G. G.
Dr. Charles J. F. G. G.
Dr. A. T. M. M.
Mr. Lundberg, Fao
Dr. H. B. G. G.
Mr. Collins (Fao)
and a few others.

Copies of suggestions will go to Fao, especially to Dr. V. G. G. for consideration, especially of:

1. Better use of soil under each trial of fertilizers.
2. Possibility of a pamphlet for each principal tropical crop, summarizing the special requirements of soil and fertilizers.

February 14, 1963

Dr. Jackson A. Rigney, Science Secretary

Charles E. Kellogg

Informal Meeting on the subject of Simple Methods of Determining
Fertilizer Requirements in Tropical Countries.

This was a good session, running from 10 a.m. to about 12:35 p.m.
About 14 or 15 people were present. We had a good exchange of views
about the problems.

I acted as Chairman. Dr. A.B. Fagundos of FAO acted as secretary
for awhile, but had to leave. Dr. E. Malavolta of Brazil took over
and will send the detailed notes to the secretariat.

It was concluded that, under the direction of highly competent soil
scientists, exploratory plots could be used by advisory people.
Several stressed the importance of soil descriptions at each site.

The following were among those present in addition:

Dr. R. Tavernier, Belgium
Prof. E. Stoffels, Belgium
Mr. St. George C. Cooper, Trinidad
Dr. Charles J. P. Magee, Australia
Dr. A. T. Mosher, USA
Mr. Lundberg, Argentina
Dr. H. D. Kay, UK
Mr. Collins (Secretariat)
and a few others.

Copies of suggestions will go to FAO, especially to Dr. V. Ignatieff,
for consideration, especially of:

1. Better descriptions of soil under each trial of fertilizers; and
2. Possibility of a pamphlet for each principal tropical crop,
summarizing its special requirements of soil and fertilizer use.

February 15: This morning at breakfast I have a nice chat with Harrison Brown of the Academy about the overlap between FAO and UNESCO. I point out that Kovda is apparently under orders to get this duplication into UNESCO, which may help the Soviets get their people into the newly developing countries but which makes confusion and embarrassment to our Government.

I go to the staff meeting on fresh snow. Revelle talks and talks and talks. He seems to have a lot of people fooled.

Somebody quotes a man from Argentina as saying that the wrong people run such conferences and the universities - physicians, lawyers, and engineers - who simply want to enhance their professional standing and ability to collect fees.

I give a brief report on the session on tropical soils.

I am back at the hotel about 10:00 and prepare for the trip to Ghent.

Prof. Dr. J.J. BOUCKAERT
rector.

Charles E. KELLOGG
on Street 4100
SVILLE.
ad (U.S.A.).



RECTORAAT

GENT, (BELGIË) 27 DEC 1962
ST. PIETERSNIEUWSTRAAT, 29
TEL. 23.38.21 (8 LIJNEN)

IN HET ANTWOORD TE VERMELDEN

JF/GV/24/2710-206

UW REF.:

BIJLAGEN:

Dear Doctor Kellogg,

I am pleased to let you know that the Senate of my University has conferred upon you by an unanimous vote the degree of doctor honoris causa in sciences.

Please consider this distinction as a tribute to your scientific achievements and as an expression of gratitude for the interest you have taken in my University.

The diploma will be delivered during the ceremony of the "Dies Natalis" of my University which takes place on saturday, February, 16th, 1963.

Details regarding this ceremony will be given to you in due time.

We shall be honoured if you may attend it.

With my warmest congratulations and kindest regards.

yours sincerely,

Prof. Dr. J.J. BOUCKAERT,
rector.

Dr. Charles E. KELLOGG
Nicholson Street 4100
HYATTSVILLE.
Maryland (U.S.A.).

To Belgium

René comes in a cab at 11:15 and we go to the airport and check in. We go out to the plane at 12:20 and are in the air at 12:40. We are down in Brussels a bit after 2:30. Tavernier's secretary meets him in a car and Jurion takes me to his home.

It is very good to see him again. We talk for awhile about a book that he is doing with Henri about agricultural development in Central Africa. The first draft is finished but he has a lot of work to do and hopes to have it ready in June for publication by the INEAC. I suggest that when finished we should try to get an edition in English.

I tell him about the session I had with the head of the Belgian delegation and the young man from the Foreign Ministry. Jurion's trouble is that he told them the truth about the foolish things they were doing in the Congo. The West Germans, the European Common Market, the Americans, the French, and perhaps others are spending lots of money in the Congo. Jurion is certain that it is essentially all wasted. He tells me that the Americans have a big project south and east of Leopoldville to teach the natives how to run tractors when what they need are hoes! He is pretty disgusted, and yet the Congo has been his whole life. I think he suspects that he will be asked to coordinate this whole effort. I don't think Mme. Jurion is very keen

about it. Jurion's sister Mme. A. Smeyers-Jurion, his son, daughter and her fiancé are all here. Dinner is very late. I get to bed about 11:00 p.m.

February 16: I am up at 6:45, pack and have breakfast. Jurion drives me to Ghent in the rain and fog. There is quite a bit of snow on the ground. As we approach Ghent the rain changes to snow.

We reach Tavernier's home about 9:00. He is not dressed yet. All the time Tavernier has assured me that they would have a gown ready for me. Not until we reach the University and I ask for the gown does he tell me that he had called about it and found that it was unnecessary!!! I can't help but feel somewhat out of place but nothing can be done. I should have brought full dress and a gown. The Rector gets worried because the representatives from the embassies are slow in coming. I meet the Counselor and the Agricultural Attaché from the United States Embassy. Finally we all march into a small and very crowded old theatre.

We start with two long speeches in Flemish and then a student speaks in Flemish. The eleven candidates for honorary degrees are each introduced by a ten-minute speech in Flemish that ends with a paragraph or two in French,



dies natalis VIERING

16 FEBRUARI 1963

—

prof. dr. J. J. Bouckaert, rector van de Rijksuniversiteit te Gent, en de leden van de Raad van Beheer hebben de eer u uit te nodigen tot de plechtigheden die op zaterdag 16 februari 1963, ter gelegenheid van de dies natalis-viering, zullen plaats hebben:

a) te 10 h:

feestzitting in de aula der universiteit (Voldersstraat 9)
tijdens dewelke het ere-doctoraat zal uitgereikt worden aan:

in de letteren en wijsbegeerte:

prof. dr. th. frings (leipzig)

prof. dr. f. alheim (berlijn)

prof. dr. r. w. zandvoort (groningen)

in de rechten:

prof. dr. j. drion (leiden)

prof. dr. a. pitlo (amsterdam)

in de wetenschappen:

prof. dr. j. w. irvine, jr. (cambridge-amerika)

dr. ch. e. kellogg (verenigde staten van amerika)

in de geneeskunde:

prof. dr. a. franceschetti (genève)

prof. dr. u. s. von euler (stockholm)

in de toegepaste wetenschappen:

prof. dr. ir. l. escande (toulouse)

prof. dr. ir. h. gelissen (delft)

b) te 19 h 30:

feestconcert in de troonzaal van het stadhuis te Gent,
met de medewerking van het orkest i solisti veneti
en van hanny steffek, sopraan aan de opera van wenen.



Het Kultureel Konvent van het Gents Studentenkorps
heeft de eer

Dr. Cl. E. Kellog

uit te nodigen op de KULTURELE AVOND ingericht als
bijdrage van de studenten tot de DIES NATALIS 1963.
De avond heeft plaats in het Auditorium Maximum van
de Blandijnberg, op vrijdag 15 februari om 19 h 30.

IMSCHOOT-GENT

Voarbehandelen.



kabinet van de rector

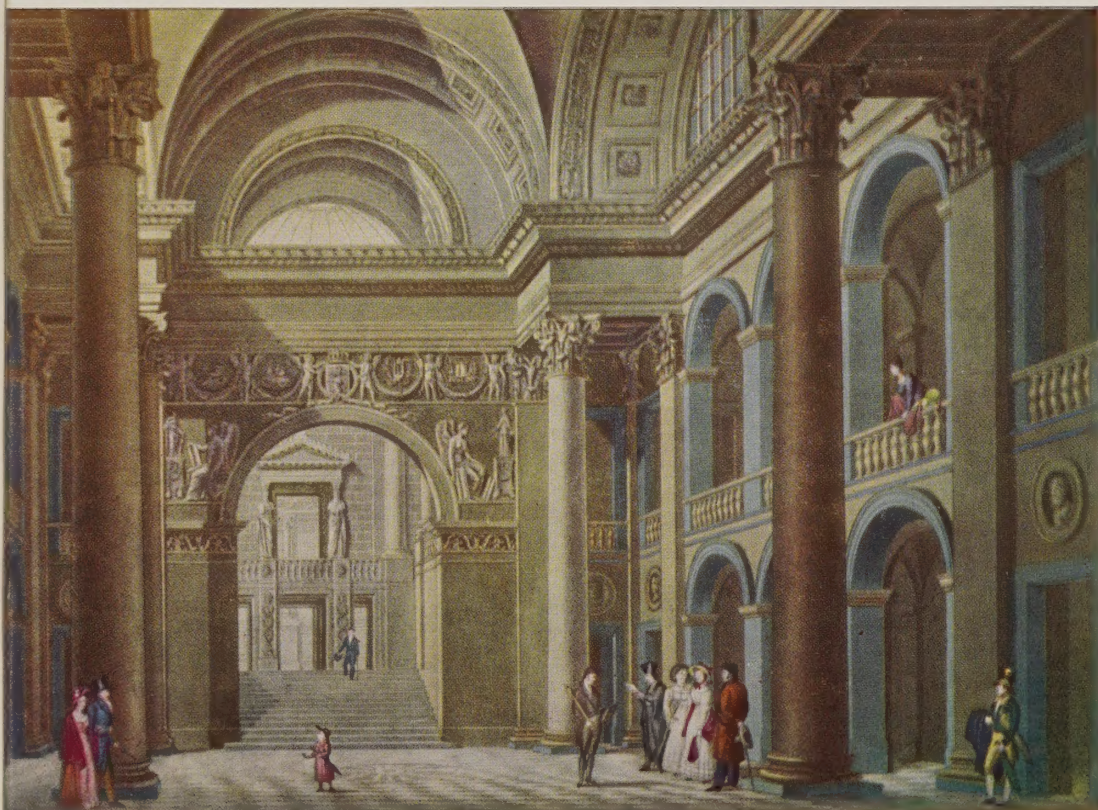
CONCERT

in de troonzaal van het stadhuis op
zaterdag 16 februari 1963 te 19 h 30



toegangskaart

IMSCHOOT-GENT



IMSCHOOT - GENT

PERISTYLE
VAN DE RIJKSUNIVERSITEIT
TE GENT

German, or English. Each is introduced to the Rector and goes forward to receive his medal, diploma, and epitage. One from Stockholm couldn't come and his Embassy receives it. Some one also receives one for an old professor in East Germany. (I am told later the US military wouldn't let him come.) Interestingly the two D. Sc. degrees in science were to Americans, to Irving of MIT and myself.

I have a general idea of what Professor Tavernier says in Flemish but he added the following in English:
"Dear Dr. Kellogg,

I have been briefly explaining the importance of your scientific work in soil classification and soil survey and especially your efforts to interpret soil science for agricultural development and human welfare.

"I am pleased to express to you today the appreciation of our university for the important contributions you made during your career to scientific research in general. In this way, we also wish more specifically to thank you for the interest you have always been willing to take in the scientific education of many of our staff.

"We are proud to count you, as from today, among the Doctors Honoris Causa of the University of Ghent."

This exercise is finished about 1:00 p.m. and we are then taken to a big luncheon in the Rectorate. Here there are four speeches, one in Flemish, two in French,

and mine in English (copy attached.)

We return to Tavernier's home where he changes. After a bit of tea we go to the tobacco shop for a new pipe, which he insists on paying for along with two extra stems to be sent and a pipe to go to Guy Smith. We also take a quick look at his office and new quarters. René drives back home again and we soon leave for the concert. It is now very cold and the streets are slippery.

I certainly got mixed up on clothes. I was told to have a tuxedo for the concert, but it was not needed!

The concert was very nice indeed and the audience extremely enthusiastic. A stringed orchestra of both Belgians and Italians played Italian music and an Austrian lady sang bits of Italian opera in German.

We leave a bit early and have a late dinner at the Cour Saint-Georges - said to be the oldest restaurant in Europe.

We drive back on the slippery streets and I get to bed a little before midnight.

February 17: I had a fairly good sleep. After breakfast we go again to the University to see the new addition to the Soil Science quarters to be used mainly by foreign students. René also wants me to help him with his application to the Ford Foundation for \$100,000. I am just

Professor Bouckaert and Faculty of the University of Ghent -

You do me a great honor, and in an historic city where the British and Americans concluded a famous treaty. As a boy I learned about Ghent long before I even hoped to come here.

My guardian angel arranged for me to work with many Belgian scientists, even closely enough to argue with them - to try to correct them and to be corrected. I have learned a great deal from M. F. Jurion and many others. I had encouragement from Professor van Straelen. For this I am grateful.

Those of us trying to learn the nature of soils, how they have formed, and how they may be used to the greatest advantage of the human race, have, I believe, a special international fellowship. In like physical and biological environments, regardless of political boundaries, we find the same kinds of soil with the same basic capabilities of responding to man's treatment and care. Any of us with responsibility, urgently want to work with our colleagues having similar soils, regardless of country. But in the process we also learn about soils new to us. And so it goes until we find ourselves involved, one way or another, with an enormous number of kinds of soil used by people in

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many ways. (Some even call us international tramps.) Continually we are trying to improve our classification of them so we have a common basis for cataloging what is known and for helping people to apply this knowledge where it fits.

Belgian soil scientists, including several from this great University under the leadership of Professor Tavernier, are in the very midst of this fellowship with colleagues all over the world.

I fear that Professor Tavernier and his associates may have exaggerated my role and my claims to the academic degree you are granting me. But I shall not complain even though I realize how much I owe to my associates and to the most helpful wife any man could have.

Yet in accepting this honor, Gentlemen, I do so in the name of a group of dedicated soil scientists from many countries who work together in a common cause - in a cause we believe to be of the utmost importance to people everywhere, and to their children's children. Our task is scarcely more than begun.

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dies natalis-viering

CONCERT

in de
troonzaal van het stadhuis te gent

met medewerking van het kamerorkest

I solisti veneti

en de zangeres

hanny steffek

zaterdag 16 februari 1963 te 19 h 30

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programma

I solisti veneti

- vivaldi** concerto in sol kl. voor snaren en clavecimbel
adagio - allegro - largo - allegro
- pergolesi** concertino in fa kl. nr 4 voor snaren en clavecimbel
largo - acappella - tempo comodo - tempo giusto
- rossini** zesde sonate voor snaren in re gr.
allegro spiritoso - andante assai - allegro

hanny steffek

Liederen van hugo wolff:

mir wurd gesagt, du reisest in die ferne.
auch kleine dinge können uns entzücken.
ihr jungen leute, die ihr zieht ins feld.
wenn du, mein liebster, steigst zum himmel auf.
mein liebster.

pauze

hanny steffek

Liederen van hugo wolff:

mein liebster singt am haus im mondenscheine.
du denkst mit einem fädchen mich zu fangen.
o wär dein haus durchsichtig wie ein glas.
ich hab in penna einen liebsten wohnen.

uit "das italienische liederbuch" 1891 von paul heyse,
übersetzt nach leopardi, giusti, carducci und ada negri.

I solisti veneti

- ovorak** serenade voor snaren
moderato - tempo di valse - scherzo -
largo - finale



- 1 St. Bavon
- 2 Beffroi
- 3 Eglise St Nicolas
- 4 Hôtel de ville
- 5 Eglise St. Michel
- 6 Maison des Bateliers
- 7 Pont St. Michel
- 8 Château des Comtes
- 9 Eglise St. Jacques
- 10 Château Gérard le Diable

St. Baafs
Belfort
St. Nikolaaskerk
Stadhuis
St. Michielskerk
Schippershuis
St. Michielsbrug
Gravenkasteel
St. Jacobskerk
Geeraard Duivelsteen

St. Bavon's Cathedral
Belfry
St. Nicolas Church
Town Hall
St. Michael's Church
Boatmen House
St. Michael's Bridge
Castle of the Counts
St. Jacob's Church
Castle of Gerard the Devil

St. Baafskathedrale
Belfried
St. Nikolauskirche
Rathaus
St. Michaelskirche
Alte Gildenhäuser
St. Michaelsbrücke
Schloss der Grafen von Flandern
St. Jakobskirche
Das Schloss von Gerhard dem Teufel

GAND - BELGIQUE - GENT - BELGIË
GHENT - BELGIUM - GENT - BELGIEN

HOTEL COUR ST. GEORGES
HOTEL ST. JORISHOF
TEL. 09/25 47 33
BOTERMARKT, 1 MARCHÉ AU BEURRE



THE "COUR SAINT-GEORGES" HOTEL OF GHENT AND ITS HISTORY

The "Cour Saint-Georges" Hotel of Ghent dates back to 1228. It is with St. Bavo's Cathedral, the Castle of Counts, St. Nicolas Church, the Belfry and the Town Hall the most ancient historical building of the city.

From the beginning it was a renowned hostelry, famous throughout Northern Europe for its comfort, excellent cooking, wine-cellar and fine liquors and is to be considered as the oldest Hotel in Europe. The monument of the "Cour Saint-Georges" presents a double historical character. During the 15th century the General-States of Flanders held their meetings there. On the 11th of February 1477 Mary of Burgundy, daughter of Charles the Bald, signed the famous "Grand Privilege" there, historical charte assuring to all Flemish cities the privilege of their independence and the right of legislation.

A spacious gothic hall, provided with a monumental chimney of unesteemable value — a sheer gem of Flemish primitive art — is jealously preserved there. It is in that very hall that the Princess Mary of Burgundy offered a banquet to the Ambassadors of Emperor Frederick III, on April 27th 1477, when they came to propose to her on behalf of the Emperor's Son. The effigy of the Lion of Flanders, symbol of the Liberty of the City, was on that occasion carved into the monumental mantelpiece.

Many of the illustrious personages who honoured the city of Flanders put up at the "Hotel Cour Saint-Georges".

Emperor Charles the fifth regularly came there during his reign and Napoleon I, Emperor of France stayed there the nights of the 2nd and 3rd February 1805.

The necessities and requirements of modern life, the development of tourism together with the ever increasing attraction that the town of Ghent exerts, compelled the present proprietors of the "Cour Saint Georges" to enlarge the establishment by annexing new buildings provided with modern accomodation. The foundations of these buildings possess a marvellous crypt in Roman style which is unique in Flanders (9th century).

L'HISTOIRE DE L'HOTEL COUR SAINT-GEORGES A GAND.

L'hôtel "Cour Saint-Georges" à Gand existe depuis 1228. C'est avec la Cathédrale Saint-Bavon, le Château des Comtes, l'Eglise Saint-Nicolas, le Beffroi et l'Hôtel de Ville de Gand le plus ancien monument historique de la Cité.

Dès le début de son existence, ce fut une hostellerie renommée dans tout le Nord de l'Europe, pour son confort, son excellente cuisine et ses caves à vins et liqueurs. Comme Hôtel c'est le plus ancien de toute l'Europe.

Le monument de l'Hôtel Cour Saint-Georges présente un double caractère historique. Durant le quinzième-siècle les Etats-Généraux des Flandres y tinrent leur assise. Le 11 février 1477 Marie de Bourgogne, fille de Charles le Téméraire, y signa le fameux «Grand Privilege», charte historique assurant aux cités flamandes le privilège de leurs franchises et le droit de législation.

Une grande salle gothique, pourvue d'une cheminée monumentale d'une valeur inestimable — véritable joyau de l'art primitif flamand — y est conservée jalousement. C'est dans cette salle que le 27 avril 1477 la Princesse Marie de Bourgogne offrit un grand banquet aux ambassadeurs de l'Empereur Frédéric III qui venaient solliciter sa main pour le prince, fils de l'Empereur. L'effigie de Lion de Flandre, symbole de la Liberté de la Cité, fut encastree à cette occasion, dans la cheminée monumentale.

Tous les personnages illustres qui firent honneur à la Cité de Flandre descendirent avec leur suite à l'Hôtel "Cour Saint-Georges." L'Empereur Charles-Quint y vint régulièrement durant son règne et



Napoléon, Empereur de France y passa les nuits des 2 et 3 février 1805.

Les nécessités et les besoins de la vie moderne, le développement du Tourisme et l'attrait toujours plus grand qu'offrent aux touristes les merveilles de la Ville de Gand, obligèrent les propriétaires de la "Cour Saint-Georges" à agrandir leur établissement par l'installation d'une annexe munie d'un confort ultra moderne.

DE GESCHIEDENIS VAN HET „SINT JORISHOF” TE GENT.

Het „Sint Jorishof” te Gent, dagtekt van 1228. Het is met de Hoofdkerk van Sint-Bavo, het Gravenkasteel, de Sint-Niklaaskerk en het Belfort een der oudste gebouwen van Gent.

Vanaf het begin was het een gasthof, beroemd door gans Noord-Europa voor keurige bediening, fijne wijnen en likeuren en uitgelezen gerechten. Het is het oudste gasthof van Europa.

Het „Sint Jorishof” beschikt over een enig geschiedkundig verleden. In de XV^e eeuw was het de zetel van de Staten-Generaal welke er hun algemene vergaderingen hielden. Op 11 februari 1477 tekende Maria van Boergondië, dochter van Karel de Stoute, er het beroemd keurrecht, waarbij alle Vlaamse gemeenten het recht verwierven zelfstandig te zijn en over het recht te beschikken hun eigen wetten te stemmen.



Een gothische zaal, voorzien van een monumentale schouw is er zichtbaar. Het is in die zaal dat Prinses Maria van Boergondië op 27 april 1477 de gevolmachtigden van Keizer Frederik III ontving, welke Haar hand kwamen vragen voor de zoon van hun Keizer.

Ter dezer gelegenheid werd een afbeelding van de Leeuw van Vlaanderen op de schouw aangebracht.

Bijzonder beroemde personages verbleven hier in het Hotel.

Keizer Karel de Vijfde verbleef er herhaaldelijk en Napoleon I bracht er de nachten van 2 en 3 februari 1805 door.

Noodzakelijkheid van moderner comfort noodzaakte de huidige eigenaars van het Hotel „Sint Jorishof” een bijgebouw van alle comfort voorzien aan hun Hotel te voegen.

DIE GESCHICHTE DES SANKT JORISHOFES IN GENT.

Der Sankt Jorishof in Gent wurde im Jahre 1228 erbaut. Mit der Sankt Bavo-Kathedrale, dem Grafenschloss, dem Belfried, der Sankt Nikolauskirche und dem Rathaus ist er eines der ältesten historischen Gebäude von Gent.

Seit seinem Bestehen ist der "Sankt Jorishof" ein Hotel-Restaurant das in ganz Nord-Europa wegen seines Komforts, seiner vorzüglichen Küche, und wegen seiner erstklassigen Weine und Liköre berühmt. Es ist als das älteste Hotel in ganz Europa anzusehen.

Am 11. Februar 1477 unterzeichnete Maria von Burgund, Tochter Karls des Kühnen, im "Sankt Jorishof" das berühmte „Grosse Privilege“, das allen flämischen Städten das Recht des Selbständigkeit und des eigenmächtigen Erlasses von Gesetzen zuerkannte.

Der grosse gothische Saal mit seinem einzigartigen monumentalen Kamin ist ein wirkliches Kleinod ursprünglicher flämischer Kunst.



In diesem Saal gab die Prinzessin Maria von Burgund am 27. Apr. 1477 ein Bankett für die Bevollmächtigten Kaiser Friedrichs III., die gekommen waren, um ihre Hand für den Prinzen und Sohn des Kaisers anzuhalten.

Bei dieser Gelegenheit wurde das Bildnis des Löwen von Flandern, Symbol für die Freiheit der Stadt, in den monumentalen Kamin eingepreßt. Alle berühmten und bedeutenden Persönlichkeiten, die die Hauptstadt Flanderns besuchten, stiegen mit ihren Gefolge im Hotel Sankt Jorishof ab. Kaiser Karl der V. kam regelmässig während seines Aufenthalts in Gent und Kaiser Napoleon I. übernachtete am 2. und 3. Februar 1805 in den "Sankt Jorishof."

Durch die Erfordernisse des modernen Lebens, sahen sich die Besitzer des Hotels "Sankt Jorishof" veranlasst, ihr Unternehmen zu vergrössern, durch Beifügung eines Nebengebäude mit allem Komfort.



and too tired to write in last 24 hours. It is not as if we were
satisfied. As is a very common, that I am not satisfied
therefore for the dedication of the building. It is
he has collected the material for the building.

We then drive to the University of Toronto. Dr. and Mrs. Thompson are waiting for us and the
Jurisdiction. We have a very nice lunch. The lunch is
not a bad one. The lunch is not a bad one.

The lunch is not a bad one. The lunch is not a bad one.
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The Taverniers leave about 7:30. The plane is not
at the airport about 7:30. The plane is not at the airport
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The wheels are down in 1940. The wheels are down in 1940.
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The wheels are down in 1940. The wheels are down in 1940.
The wheels are down in 1940. The wheels are down in 1940.

I am too tired to write it but I dictate it to him and he seems satisfied. He is a bit unhappy that I am not staying tomorrow for the dedication of the building for which he has collected two cabinet ministers.

We then drive back to Tavernier's home and I pack. Dr. and Mrs. Tavernier are invited for lunch with the Jurions. We have a little trouble finding the place and are a bit late. The luncheon is slow and nice.

Then after the coffee and tea Dr. Fripiat and Mlle. Gastuche join the group. There is a great deal of discussion about the Flemish-French quarrels now going on in Belgium - a kind of tribal warfare involving language, religion, and economics. Tavernier and Fripiat have quite an argument.

The Taverniers leave about six and Jurion takes me to the airport about 7:20. Mme. Jurion had called and got the usual story that the plane was on time. They tell us that at the ticket desk so I leave Jurion and go into the closed part of the airport. When I get to the gate I discover that the plane hasn't even come from Zurich yet. But it does come very soon. We board about 8:50 and are in the air at 9:02.

The wheels are down in Geneva at 10:40 so a bit of time was made up.

While I wait for my bag a fellow passenger shows me her beautiful white kitty that has taken all of the possible prizes in Europe.

The customs man waves me through and I am the first to get a taxi for the hotel.

In bed at 11:30 very tired indeed.

Academician Bogololov, an hydrologist and the USSR delegate to the UNESCO arid-zone committee, speaks on opportunities for water conservation.

Georges Aubert gives a whole series of examples from Africa of erosion, salinity, soil clearing, etc., from his project designs.

Stoeffels of Belgium speaks convincingly in the case for protecting the areas of primary and secondary forests of crop plants as worked out especially by Professor Vavilov. He points out that as new diseases appear it is often essential to go back to these sources for the germ plasm needed in breeding programs.

Mr. Lebegue, a delegate from the Soviet Union, speaks on the great parks in the USSR and their plans to preserve them as scientific centers for scientists from all countries.

I speak on soil conservation (manuscript attached).

The delegate from the Soviet Union speaks of the mistakes in the Gobi Desert. They didn't plant enough areas for protection. (Later he speaks and Aubert gives a strong

February 18: Up at 6:45 and finish a letter to Mommy and then to the delegation meeting with more discussions of maneuvers.

I hurry to the Palais for the meeting on Conservation held in the press room with Sir William Slater in the chair. Harroy of Belgium makes an emotional opening statement. Academician Bugololov, an hydrologist and the USSR delegate to the UNESCO arid-zone committee, speaks on opportunities for water conservation.

Georges Aubert gives a whole series of examples from Africa of erosion, salinity, soil blowing, etc., from bad project designs.

Stoeffels of Belgium speaks convincingly on the need for protecting the areas of primary and secondary sources of crop plants as worked out especially by Professor Vavilov. He points out that as new diseases appear it is often essential to go back to these sources for the germ plasm needed in breeding programs.

Mr. Lebugha, a delegate from Congo-Leopoldville, speaks on the great parks in the Congo and their plans to preserve these as scientific centers for scientists from all countries.

I speak on soil conservation (statement attached).

The delegate from the Sudan speaks of the mistakes in the Gezirah Scheme. They didn't plan enough areas for firewood! (Later both myself and Aubert give a strong

defense of the Gezira Scheme as one of the best examples in the world of a properly planned development on an extremely difficult soil.)

A delegate from Tanganyika talks about wildlife conservation.

A New Zealand delegate explains the growing forestry program in his country.

A member of the UK delegation talks about the possibilities for the application of soil and water conservation in East Pakistan.

Dr. P. Receveur of Niger speaks briefly about the problems in his country.

A delegate from Argentina talks about a Swiss machine being used in the jungle to harvest vegetation that can substitute for coal. This is not clear to me. Nor is his further statement on the use of dried plant material to control soil acidity.

Several others speak briefly. I think the session was quite worth while. (Added later: It gets a nice report in the Journal de Geneve, attached.)

I go to lunch with Aubert and then get a car for the Gatt building to write out my speech and make some reports. I finish about 4:30 and am very tired. I return to the hotel, write out my "thank-you letters" to Belgium, have an early dinner, and go to bed at 8:30 with a somewhat upset stomach.

SOIL CONSERVATION

Charles E. Kellogg

Monday, February 18, 1963

By "soil conservation" I mean a positive concept, not simply one of saving. I mean using all the soils needed for use according to their most rewarding long-time potentials. Soils contrast greatly from one another, not only between unlike regions but also in different parts of a single village. Some of the differences, say in slope and color, are obvious; but many other soil characteristics of vital importance to soil use are not obvious from surface appearance. Then, too, we can change soils. Many unstable, erosive soils are stabilized by increased fertility through the use of chemical fertilizers that permit a protective and productive cover.

Each kind of soil has one or more alternatives for use. Some have many alternatives. Certainly, scientific work is needed to discover these, but great advances in methods have been made in recent years.

The alternative to select depends on needs and economic demand as well as on the skills and facilities of the users. Nearly all of the developing countries have plenty of responsive soils. In a few places it may be necessary to use for crops soils not suitable to them. Hong Kong is an example. But usually this is unnecessary.

Under anything like modern soil use, one is not concerned with the productivity of the soils as we find them in nature.

In fact, most tropical soils do not produce well without modification through chemical fertilizers, or special tillage, or practices for water control.

In field practice we can scarcely separate water and soil. Soil erosion control is largely a matter of water management. The practices to use depend on the kind of soil. On many soils, terracing can be used to let the water soak in so that it is available for crops or grass. Such additional water makes possible higher yields or even two crops instead of only one. On the lower slopes wells may have more water for irrigation. With a good system, erosion is also avoided.

Every farm or village needs a good system of water control. If soils are permeable and rainfall is well distributed, the matter is easy. But many useful soils are slowly permeable and rainfall is scanty or irregular. So, some combination is needed of irrigation, drainage, terraces, and land smoothing to control the water for crop use and to let the excess flow away slowly and harmlessly.

On some soils water control can be had by permanent vegetation alone with practices that maintain fertility. Depending on the kind of soil, there may be forage or useful trees.

The point is that the soils and their interactions with water and plants can be known and should be learned in advance. After a soil is eroded or waterlogged, its restoration can be very costly or nearly impossible. The debris from erosion, or

from soil blowing during dry and windy periods, can injure other soils.

We need to know the soils, to map them, and to explain their hazards and potential capabilities to the users. This can be done. Some may say it is expensive, but the cost is only the tiniest of the wastes that are nearly inevitable without soil surveys and associated studies.

We have seen irrigation schemes, settlement schemes, and experts to increase cash crops that failed simply because the soils were unknown. I've seen them in my own country and in several others. More than the waste of soil and water is the waste of human labor.

The great catastrophes in soil use have come about from using a scheme of use that works well on one kind of soil - or rather, with one combination of soil, water, plants, and people - but not in another place where conditions are different and not understood. For example, it is easy to spoil tropical soils with tractors that are highly useful on soils of temperate regions.

And these wastes are such a pity - so unnecessary. We now have the techniques and knowledge to find safe and productive combinations of soil, water, plants, and people, which is soil conservation. Thus, I think of soil conservation as an integral part of the development of agriculture, forestry, grazing, and recreational areas - not a special subject or skill apart.

February 19, 1963

Dr. Jackson A. Rigney Science Secretary

Charles E. Kellogg

Informal Meeting on the subject of the Conservation of Renewable
Natural Resources

This was proposed initially by Prof. Jean Paul Haricoy of Belgium. Sir William Slater presided. Haricoy gave a sincere but romantic speech at the start and again at the end.

The attendance was good from both the newly developing and advanced countries. About 60 were there at 10:30. The total may have been 75 or 80.

Speakers were as follows:

Academecian Bugomalou (USSR) spoke about surface water.

Professor Stoffels (Belgium) discussed the need for conserving the primary and secondary original sites of crop plants.

Professor Georges Aubert (France) and Dr. Charles E. Kellogg spoke about soil conservation and the need for advanced study of all "schemes."

Mr. P. Lebieghe spoke about the efforts of the present Congo government to maintain the great National Parks for uses by scientists everywhere.

Delegates from Sudan spoke on need of forest plantings for firewood in agricultural areas.

Delegate from Tanganiyika spoke on wildlife preservation.

Japanese delegate spoke about increasing yield with fertilizer.

UK delegate spoke on East Pakistan.

Receveur of Nigeria spoke briefly.

Mr. Lundberg (Argentina) described local work.

A few others spoke briefly. Several spoke of the need for more UN effort in this field.

February 19: After a fair sleep I am up at 6:00 a.m. looking over the papers and sorting them out.

At the delegation meeting Dr. Rigney shows me a draft of his report in which he deplores the neglect of agriculture. I suggest he tone it down a bit.

Then to the Palais for the session on Agrarian Structures and Land Settlement.

There are several speakers. Kotovsky of the USSR criticizes the American paper by Kenneth Parsons because "he confuses the objectives." He says that it is unfair and unscientific to point to the low productivity of collective farms in socialist countries. (I fail to see why).

Hagrass of the UAR talks about the need of farmers having their own land and other incentives to produce. He talks about a single holding being 100 acres. (This doesn't quite make sense. I am sure this is larger than most can expect on the good soils.)

Father Ligutti, who used to work a good deal in the United States, is now at the Holy See as a sort of "county agent" for the Pope. He gives a half-humorous and half-sarcastic talk attempting to show the good influence of the missionaries in contrast to the communists.

A French speaker gives a detailed description of the land pattern of a village in Dahomey. This is the sort of thing for which one might get a Master's Degree.

Dr. R. A. Propovkina, of the USSR, speaks on monoculture in underdeveloped countries. Then she tells about the wonderful job done by the USSR in agricultural improvement in Uzbekistan. What relevance this has I don't know.

Professor Kenneth Parsons of the US speaks rather poorly. He just cannot get down to brass tacks. He talks vaguely of the freedom theory basic to production in the Western countries and the duty theory derived from Karl Marx. This amounts to a political statement that may be answered. (Added later: But still it got several press notices!)

Chen, of Formosa and others talk briefly. I leave for a few minutes and return just before Professor Staner gives a good description of the systems in the Congo.

As I expected, a Soviet delegate goes after Parsons of the US and Ligutti of the Holy See for their political cracks that I had thought to be in bad taste. Of course he doesn't add any light but he did show that he knew what they were doing.

I have lunch with Professor Staner and a young man of the Belgian delegation.

I go to the afternoon session on Agricultural Extension. The secretary's summary is good except that he tends to assume that advisory people are better in technical work than they really are. (This is a common error: If an advisory person fails it is put down to "specialty narrowness", whereas most failures are due to poor knowledge of their own specialties.)

(I note the use of the word "extension" in the title of this program. I still think the better international term is "advisory service.")

Mr. R. J. M. Swynnerton of the UK emphasizes the preference for intensifying agriculture to take care of unemployment in rural areas. In many instances this can be done cheaper than a wholly new settlement.

Tepicht of Poland says that extension cannot succeed without a grand plan for agrarian reform.

Gibson of Canada gives quite a talk about (1) conditions for output-increasing practices and (2) conditions for labor-saving practices. He apparently thinks he has stated some eternal verities from examining recent developments in Canada and the United States. He overstresses the role of "farm management" as a coordinator of other specialists. (This would be all right if he would stress

the importance of the farm management plan but he gives the idea that he is talking about an individual having some training in agricultural economics being a co-ordinator. Usually this fails.)

Thomsen, of Denmark, speaks at great length about all of the well-known rules of advisory work, demonstrations, and so on.

It is already late in the afternoon and the chairman says he has fourteen names for five-minute speeches. So I leave and happily get a ride immediately to the hotel for a bit of rest, a haircut, and an early dinner.

Une banque des pollens sauvera-t-elle l'humanité ?

« Je crois fermement que les dieux ont donné aux hommes tous les éléments nécessaires à leur bonheur, et c'est le devoir des hommes de préserver l'œuvre des dieux. » Telles furent les paroles du professeur Stoffels (Belgique) qui résumait ainsi l'angoisse profonde qui saisit les naturalistes devant l'inconscience tragique avec laquelle les gouvernements vilipendent les ressources naturelles : terre, eau, flore, faune.

Là encore, on se rend compte que le développement est un processus global, et qu'à vouloir accélérer la croissance sur un front seulement, on va droit à la catastrophe. Le développement repose sur un tripode, insiste le professeur Harroy (Université de Bruxelles), lequel est formé de l'économie, de la sociologie et de l'écologie, cette dernière science s'inquiétant des équilibres naturels qu'il est nécessaire de conserver. Mais, poursuit l'orateur, les technocrates qui déjà s'agacent de l'obligation qu'on leur fait d'inclure les facteurs sociologiques ou humains dans leurs équations, ne répondent que par des sourires polis lorsqu'on leur demande de tenir compte dans leurs plans de la préservation des ressources existantes.

Ces précieuses reliques

Le professeur Stoffels ne mâche pas ses mots, et il lance un appel étrangement émouvant qui a trait à notre survie à tous. Il demande, d'accord avec MM. Pal (Inde) et Brieger (Brésil), que l'on crée de toute urgence des banques de graines et de pollens dans les centres d'origine des plantes dont l'homme se nourrit. En effet, explique-t-il, le seul moyen de lutter contre les maladies nouvelles qui frappent les plantes est de remonter à la plante d'origine qui possède les défenses adéquates. Ainsi, par exemple, le mildiou de la pomme de terre semblait devoir annihiler la culture de ce tubercule sur la planète, et par sa faute nombre de pays connurent la famine. Aucune recherche n'aboutit jusqu'à ce que le phytogéographe russe Vasilow entreprenne de déterminer le lieu d'origine de la pomme de terre. Là il découvrit un type de plant « original » qui ne produisait pas de tubercules, mais possédait des gènes résistant au mildiou. Il suffit de croiser ce plant avec ceux d'Europe pour obtenir une nouvelle espèce de pomme de terre résistante à la maladie.

Les plantes qui émigrent perdent, lors d'hybridations ou simplement au cours de leur adaptation au nouveau milieu, certaines de leurs caractéristiques originelles. Actuellement on note que les patates douces d'Afrique ne résistent pas aux viroses. Cette maladie en est encore à un stade bénin, sauf en Ouganda où il est impossible de cultiver la patate douce. Il est certain, souligne le professeur Stoffels, que d'ici dix ans peut-être, ou mille, mais qu'importe, la patate douce sera incultivable, ce qui provoquera de graves famines. Pensons encore au manioc, dit l'orateur, si on ne pouvait plus le cultiver, ce serait la mort de l'Afrique.

Vasilow a déterminé douze centres d'origine des plantes : l'Abyssinie, le bassin méditerranéen (spécialement près de Valence), la Syrie, l'Afghanistan, la zone indo-birmane, la zone Siam-Malaisie-Java, la Chine, le Mexique, le Pérou, le Chili, le Paraguay et les Etats-Unis. Quelques-uns d'entre eux, l'abyssin et l'afghan

notamment, sont encore intacts. Il faut en assurer la préservation maximum. « Si l'humanité ne préserve pas ces reliques, proclame le professeur Stoffels, elle devra disparaître. »

Avant le constat de décès

Quelques avertissements graves sont encore donnés quant la préservation des eaux et des sols. M. Kellogg, du ministère américain de l'Agriculture, rappelle que chaque cas est unique qui se fonde sur le délicat entremêlement de quatre variables : le sol, l'eau, les plantes et les gens. Vous ne pouvez pas appliquer au développement agricole d'une région des méthodes qui furent efficaces ailleurs. Si vous cultivez la côte de Malabar en Inde avec nos tracteurs américains et selon nos méthodes, elle cessera complètement de produire au bout de dix ans. Et pourtant avec des méthodes plus rudimentaires, mais plus adéquates aussi, cette terre produit depuis plus de deux mille ans.

Le pédologue ne doit pas être appelé pour dresser des constats de décès, dit le même orateur, il doit au contraire pouvoir étudier les sols avant que des dégâts irréparables ne se produisent. Le coût d'une telle étude préalable ne sera qu'une petite fraction des gaspillages évités.

Pour lutter contre les trois dangers qui menacent le sol, à savoir : l'érosion, l'épuisement chimique et la salure (la nappe de Sfax en Tunisie, par exemple, devient sans cesse plus salée, et l'on craint de devoir interrompre dans quelques années les cultures irriguées par elle), le professeur Aubert ne voit de solution que dans une coopération entre nations afin que des cas typiques soient étudiés à fond et puissent servir d'indicateurs pour des cas proches.

Ainsi donc l'écologie est une science qui assurera notre survie. Il convient de le proclamer, car trop nombreux sont les inconscients qui s'imaginent que l'eau, la terre, et la vie végétale et animale, peuvent être gaspillées sans arrière-pensée. Nous devons apprendre à voir loin, très loin dans le temps, si nous ne voulons pas que le XXe siècle ne soit qu'un feu d'artifice éphémère.

Claude Monnier.

February 20: We have our delegation meeting at 8:00 and are told that we can suggest agencies for receiving copies of the summaries.

Then to the Palais for the final session beginning at 9:00 a.m. (See Journal for this day.) The head of each of fourteen delegations speaks for five minutes. Academician E. K. Federov speaks on colonialism. He says the underdeveloped countries are poor not because of any lack of resources or poor people but because the people and resources were used to enrich other countries. He does not believe that a few more international bureaucrats will help much. The newly developing countries must take over their own resources at once. The funds required should come from the countries that have previously exploited them. Then he gives us this nugget: "The USSR has never exploited any other country!" This is about as big a one as anyone could tell. (Copy attached.)

Dr. Walsh McDermott gives a nice speech and compliments the bright young men at the Conference from the newly developing countries. (Copy attached.)

During the short intermission I have a glass of tea and chat with Sir William Slater who isn't well and needs to go home.

Then we are back and have the report of Dr. Carlos Chagas, the Conference Secretary-General. He talks on

and on with platitudes and plagiarisms for more than thirty minutes. It is unbelievably dull. I play with the switches and find it no better in French, Russian, or Spanish.

Then comes Mr. Paul Hoffman for the Secretary-General of the UN. About five minutes of his speech are relevant: He explains that the Vice Presidents will be meeting in the UN along with the President of the Conference and other officials to discuss what sort of follow-through of the Conference should be planned. But the other 25 minutes of his speech consists of sticky platitudes that we have all heard hundreds of times.

Then come three speeches by relatively young men from the newly developing countries.

Mr. Abba Eban, Minister of Education and Culture in Israel, speaks very well about the export of science and technology from where it is abundant to where it is scarce. He says that such formulations really distort the truth of international politics. He raises the question of using so much money for celestial mechanics in the face of so many other needs. (Copy attached.)

Professor Abdus Salam of Pakistan and Dr. Frederick T. Sai of Ghana also speak very well. Salam refers to the diseases of the rich as contrasted to the diseases of the poor. (Copies attached.)

Finally Professor M. S. Thacker of India gives his final address as President. He repeats the outline of the Conference and runs on and on and on with nothing but platitudes. If anything, he is worse than Hoffman and Chagas because he takes longer.

Finally the session closes at 1:05 and I get a ride immediately to the hotel. I leave my things and go to a little tea room all alone. I get some money, send a purse to Mommy, and look at more book stores without success.

I am back to the hotel about 4:00 p.m. and finish packing. About 6:00 I go to a cocktail party for the US staff that helped the delegation and take Dr. Jackson Rigney to dinner in the Hotel. To bed at 9:30.

1. Opening of the Plenary Session by the President of the Conference
2. Speeches
 1. Professor Josef Lohel (Czechoslovakia) E
 2. Professor Henri Langer (France) F
 3. Professor A. D. Pugaevskiy (USSR) E
 4. A. E. Jean Forquas (Guinea Coast) F
 5. Professor Shigeo Hamada (Japan) E
 6. H. E. Emilio Calderón Fajó (Guatemala) E
 7. Professor J. C. Kleron (Nigeria) F
 8. Academician E. K. Padinov (Union of Soviet Socialist Republics) E
 9. Mr. Juan El-Din Hedayat (United Arab Republic) E
 10. Dr. William Slater (United Kingdom of Great Britain and Northern Ireland) E
 11. Dr. Wahl McDermott (United States of America) E
3. Suspension of the session for 20 minutes at 10:15 a.m.
4. Address by Dr. Carlos Chagas, Executive Secretary-General E
5. Address by Mr. Tord Hoffman on behalf of the Secretary-General of the United Nations E
6. Speeches
 1. Mr. Abbe Elus (Israel) E
 2. Professor Abbas Salam (Pakistan) E
 3. Dr. P. T. Sai (Ghana) E
7. Closing Address by Professor M. S. Thacker, President of the Conference E



JOURNAL

Number 16

Wednesday, 20 February 1963

PROGRAMME

Wednesday, 20 February 1963

CLOSING PLENARY SESSION

9 a.m.

Assembly Hall

1. Opening of the Plenary Session by the President of the Conference

2. Speakers:

B ✓ The Right Honourable the Lord Casey (Australia) E

e ✓ Dr. J. W. T. Spinks (Canada) E

e ✓ H. E. Fernando García Oldini (Chile) S

e ✓ Professor Josef Lukáš (Czechoslovakia) E

e ✓ Professor Henri Laugier (France) F

e ✓ Professor S. D. Pusponegoro (Indonesia) E

e ✓ H. E. Jean Porquet (Ivory Coast) F

e ✓ Professor Shigenori Hamada (Japan) E

e ✓ H. E. Emilio Calderón Puig (Mexico) S

B ✓ Professor J. C. Edozien (Nigeria) E

F ✓ Academician E. K. Fedorov (Union of Soviet Socialist Republics) R

B ✓ Mr. Salah El-Din Hedayat (United Arab Republic) E

B ✓ Sir William Slater (United Kingdom of Great Britain and Northern Ireland) E

A ✓ Dr. Walsh McDermott (United States of America) E E+

3. Suspension of the session for 20 minutes at 10.20 a.m.

10:55
4. ✓ Address by Dr. Carlos Chagas, Conference Secretary-General F

5. ✓ Address by Mr. Paul Hoffman on behalf of the Secretary-General of the United Nations E very poor

Also observations, congratulations, repetitions, "human resources" etc. etc.

6. Speakers:

A Mr. Abba Eban (Israel) E speaks well, but too long.

B Professor Abdus Salam (Pakistan) E do

A Dr. F. T. Sai (Ghana) E speaks well

7. Closing address by Professor M. S. Thacker, President of the Conference E

D a bit stuffy

Messages from Heads of State

A message addressed to the President of the Conference by the President of Liberia has been received and is available in all four languages at the Documents Distribution Desk in the main lobby, under the symbol E/CONF.39/INF.45.

Conference Officers

Assembly Hall :

Miss L. Moyse extension 2977

Chief Conference Officer:

Mr. R. Bernard (room A.642, extension 3036)

Assistant to the Chief Conference Officer:

Miss K. Sandwell (room A.642, extension 3036)

General enquiries room A.267, extension 2660

Directory of Participants

Addendum 6 to the directory of participants (E/CONF.39/INF.7/Add.6) will be available at the Documents Distribution Desk in the course of today, 20 February. It supplements, on the basis of registrations made on 19 February, the information contained in documents E/CONF.39/INF.7 and Add. 1, 2, 3, 4 and 5.

Forwarding of mail

Representatives to the Conference and members of the Conference Secretariat who wish to have mail re-addressed to them from the Palais des Nations are requested to give the necessary instructions *in writing* to the UNCSAT Enquiry Desk *before leaving Geneva*.

* * *

This is the last issue of the *Journal*.



UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

E/CONF.39/INF.62

20 February 1963

Original: Russian

ADDRESS BY ACADEMICIAN E. K. FEDOROV

Geophysicist, Hydrometeorological Service of the USSR
Head of the Delegation of the Union of Soviet Socialist Republics
to the closing plenary session of the United Nations Conference
on the Application of Science and Technology for the Benefit of the
Less Developed Areas. Geneva, Switzerland.

Mr. President, Fellow Delegates!

It seems to me that our Conference has done a good job by the mere act of presenting to the entire world, by demonstrating to the entire world, yet again all the importance and all the vast scope of the problem of the developing countries. The gulf between the level of production in different countries, the chasm between the level of prosperity in different countries, has not opened up overnight. Neither did it open up because some countries are poor in natural resources, or because their peoples are somehow incapable of adapting themselves to science or technology. No, we know that many developing countries possess very rich natural resources, and the achievements of their ancient civilizations still fire the imagination. It is clear to us that the peoples of these countries are poor because their natural wealth, and the very labour of their people, have for a very long time been used to serve the interests of other countries, who built up their prosperity on this basis. And whereas, earlier, during the period of colonial domination they could not tell the world of their needs, today, when they have won their political independence, they will not and cannot tolerate any longer low standards of living or obsolete economic systems. The time has come to change the situation rapidly. And this, I think, is the main problem of the developing countries.

Can this problem be solved? Yes, it can. The potentialities of science and technology, which today stand at the disposal of the whole of mankind but did not exist earlier, here speak for themselves. In the many hundreds of papers submitted to our Conference all these possibilities have been examined. This can be seen from the experience, the practical experience, of the rapid development of backward regions in many countries, for example, the Soviet Union, particularly in Central Asia, and some of the socialist countries in the East and the West.

This, too, was propounded in hundreds of the papers submitted here by different scientists. This problem can and must be rapidly solved within the lifetime of a single generation. What is needed to solve the problem? Word has gone round of new institutions within the United Nations family, but I do not believe that another thousand international civil servants, who would begin to take up this work, would provide the solution to this problem.

To my way of thinking, the main thing is that the peoples of the developing countries should have full control of their natural resources, and that they should be able to use their own manpower to improve their well-being. It seems to me, that the achievement of full economic independence is extremely important. For this, it is essential that they apply the most advanced and most efficient methods in both small-scale and large-scale production. For this, it is equally necessary - and this has been shown in a large number of papers submitted to our Conference - that the training of their own resources of experts and scientists should be at all costs speeded up.

Of course, funds also are required; and alongside the total mobilization of the domestic resources available in each country, there is a need to attract resources from abroad. And those countries which, in the past, built their own prosperity on the exploitation of the natural resources and manpower of the less developed countries should be the first to provide such help. A different contribution to this work has been made, and will continue to be made, by other States; and the Soviet Union, which has never turned to its own advantage the resources of the developing countries, is providing, as everyone knows, considerable assistance in this field.

We scientists have gathered here in order to discuss the many questions of the application of science and technology. The time has long since passed when scientists lived secluded in the ivory towers of their laboratories, taking no interest in the outside world. Today, when science is exerting an enormous influence on life, scientists appreciate their responsibility for the ways in which their knowledge is being applied. No wonder, that hundreds and thousands of eminent scientists throughout the world are fighting for peace, are fighting to remove the threat of a devastating war, are fighting for co-operation between the nations. And the Soviet scientists attending our Conference have enthusiastically supported the appeal, which originated in our midst, addressed to the Eighteen-Nation Committee for the speedy discontinuation of nuclear tests and the solution of the problem of universal and complete disarmament.

It seems to me, too, that the problem of the developing countries must become, not simply the professional concern of those scientists who are directly interested in it, but the great common task of all progressive scientists in the world. Soviet scientists have learned much at this Conference and are grateful to their colleagues for the experience they have gained here. We now understand the problem of the developing countries better. We deeply appreciate all the feelings which our colleagues in developing countries are experiencing, because we ourselves went through the same difficult times a few decades ago, times of backwardness, want and illiteracy for many of the peoples of the Soviet Union.

All that is now far behind us, and we are firmly convinced that these problems can be solved quickly in any country. I imagine that our colleagues from the developing countries who are present here, realize now that today nothing lies beyond man's reach, provided he makes intelligent use of his powers, and disposes intelligently of his own fate. We warmly wish all our colleagues success in their great and difficult endeavour and assure them that our knowledge and our experience will always be at their disposal.



UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

E/CONF.39/INF.65

20 February 1963

Original: English

ADDRESS BY DR. WALSH McDERMOTT

Professor of Public Health and Chairman of the Department,
of Cornell University Medical College

to the closing plenary session of the United Nations Conference
on the Application of Science and Technology for the Benefit
of the Less Developed Areas. Geneva, Switzerland.

Mr. President, Members of the Conference. Mr. President my delegation congratulates you and Dr. Chagas on the grand job you have both done for this Conference. Today marks my first appearance as a listed speaker before this Conference and this is as it should be, for like all of us I came to this Conference to learn. To be sure I have not learned all the facts and all the papers of this Conference, but neither have I read all the books in my university library back home. In neither case does this dismay me, for I have long since found that I have much to learn, that I am still learning and that when I can know what I did not learn today, it is that much easier to get at it tomorrow.

This is true of the student in the university and it is true of would-be delegates of this Conference which in a very real sense has been a replica in miniature of a university. These are affairs of the mind and at the end of this Conference as on graduation day at the university, the faintly cynical question of: What did you get out of it? betrays an ignorance of what the learning process is all about. Thus, I cannot pretend to give a tightly reasoned analysis of the process or the relative values. This will have to await another day. But what I can do is to report my immediate impressions - impressions largely based on what I have been told by the many delegates here - those from the highly developed and those from the less developed countries.

Indeed, the most vivid impression of all is the truly extraordinary young men who have played such prominent rôles here in virtually every

delegation from the newly developing nations: these young men who have expressed themselves so well and with such great good sense in Spanish, French or English, although for many their public language is not their native tongue. You ask for hope. We have received here the finest hope of all in these young men and it is from what these young men have been saying here that I have gained most from my impressions.

They recognise that if the Conference has been broad, it is no broader than the problem and that this is something that cannot be avoided by immersing oneself in a single narrow technology.

Thus, if this Conference has done no other thing, it has totally demolished a notion that there is some single magic approach, be it capital transfer or education, that is the major answer to it all.

No industrialized country has the whole answer for the societies starting on the pathway to modernization. Science and technology are tools, useful tools, wonderful tools, but they are not absolute tools by which a nation can be built overnight.

The glamour of such instruments as atomic energy is giving way to realistic and knowledgeable judgment as to what science can do and what science cannot be expected to do. At least in the immediate future.

We have heard that science and technology cannot be transplanted ready made, and that there must be scientific and technological institutions in the receiving countries. We have heard that we must constantly review the existing international machinery for the application of science and technology in the development process and, what is more, we have heard that we must develop new systems, a multi-national effort to fulfill the needs that the United Nations can identify and define but which it cannot do itself for lack of funds.

To arrive at a consensus that development is whole, that the pattern of development is unique for each country, that science and technology are essential but have no inner magic, that national institutions are needed to receive international aid and that flexibility and adaptability are required even of our youngest national institutions. This is a formidable accomplishment of the intensive course we have been receiving here in the

crowded days behind us. To me these are convincing truths from a welter of facts.

One final word. We must move fast and we have learned here that people can adapt to amazingly rapid change so long as they receive some human support in the process. Well, we are talking about human beings and let it never be said of any of us going forth from this Conference that we have used science and technology so clumsily, as might happen in any family anywhere, that a father's whole experience becomes totally without meaning for his son.



UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

TEXT OF ADDRESS DELIVERED BY

H.E. Mr. ABBA EBAN (ISRAEL)

to the closing plenary session of the
Conference on the application of science and technology

Sixteen days ago we began a dialogue of which the end is distant and the consequence still unknown. But there can be no uncertainty about the greatness of our theme. It is nothing less than the intersection of the two movements which dominate the life of our age. One of these is the growth of knowledge. Vast conceptual changes, new terms for the understanding and definition of nature, have gone hand in hand with spectacular technological results. Man is now clothed with a power which he never previously held - to generate and control energy; to fructify land; to conserve and utilize water; to combat disease; and to draw mankind together in close and constant accessibility.

Together with the growth of knowledge we have celebrated the growth of freedom. The movement of scientific progress has been accompanied by an intense movement of national liberation. More than fifty states, most of them in Africa, have added their flags to the international family within the past two decades.

Fifteen years ago a quarter of the world's population lived in colonies and dependent territories under the rule of imperial powers. Today the emancipation of Asia is almost complete. In Africa the family of independent states has grown from three to thirty three. All but a few of the 230 million Africans have achieved their sovereignty or are negotiating for its early attainment. Multitudes are newly embarked on the adventure of freedom with its pitfalls and hazards - but also with its deep, enduring satisfactions.

If constitutional freedom could itself guarantee welfare and equality we should now be celebrating mankind's golden age. But in the awakening continents political freedom has not been attended by a parallel liberation of peoples from their social and economic ills. Behind the new emblems of sovereignty millions continue to languish in squalor, illiteracy and disease. Men awaken to learn that they may be free in every constitutional sense and yet lose the essence of their freedom in the throes of famine and want. As the political inequality between nations passes away, a new inequality comes to the fore. It is the inequality between those who inherit the new abundance and those who can only look in upon it from outside.

This conference has sharply revealed the extent of the gulf separating those two worlds. In the advanced countries the average per capita income varies between \$900 in Europe and \$2,500 in North America. In most countries of Asia and Africa it is \$50 to \$100. In advanced western countries the average life expectancy has reached 68 to 71. In the undeveloped areas it stands between 29 and 39. In the west industrialization goes forward with swift momentum. In most of the new states it is impeded by the lack of basic technical skills, of power and transport, and of the social and economic infra-structure necessary for a technological society. Natural resources are abundant but not developed. The lack of momentum in the educational movement prevents a wider acquisition of technical skills. Debilitating diseases continue to enfeeble the people and set a limit to production. At the same time the expansion of welfare in the advanced countries is swift and headlong. And the gap is becoming wider, with the science and technology of the advanced countries increasing it dynamically year by year.

Meanwhile the pressure of population on resources grows more intense. Since this Conference convened here on February 4 the world's population has increased by 1,600,000. It has grown by 10,000 since this morning's session began less than three hours ago. The resources available for development have not correspondently increased.

The disparities in achievement between the advanced and the developing States do not arise from any inherent inequalities in moral and intellectual capacity. Nothing has been achieved by Europe and America of which Africa and Asia are intrinsically incapable. Indeed, if a conference similar to this had been convened some centuries ago, the east would have been defined as the advanced world, the west as the backward region. The truth is that since the scientific revolution began one part of humanity has been cut off from contact with processes of thought and action which have endowed another part of humanity with the elements of its power.

It might seem that all we need to do is to "export" science and technology from countries in which it is abundant to countries in which it is scarce. Such an easy formulation would distort the truth. Science is a plant which can only grow in certain conditions of social climate and economic soil. It cannot be transferred fully grown. Science is not a monopoly of any social system. It has flourished both in capitalist and in socialist societies. It has prospered in big states, but some of its most eminent representatives and institutions have arisen in small communities. Nevertheless, it is a tree that will only grow in a society which possesses a vision of development, which allows freedom for the creative imagination, and in which education, the pursuit of scientific truth, and the penetration of the spectacle of nature are held in profound respect.

Every state, however poor and small, can train enough of its citizens to ensure its own entry into the domain of scientific thought and action. Indeed, the prolonged exclusion of any state from that world is compatible neither with its national dignity nor with its economic and social progress. But the narrowing of the gap between advanced and developing states requires international action going far beyond scientific advice and technical training. I shall try to indicate some of the paths which this Conference has charted.

(1) There must be a vast increase in the flow of capital available for developing states. Some of us have joined in calling attention to the improbability of such an increase so long as 150 billion dollars and untold efforts by scientists and technicians are spent annually on the arms race. Even if our hopes in this direction are not fulfilled, something can be achieved by a more logical system of human priorities in the world's scientific effort. How is it possible to justify the expenditure of tens of billions of dollars in prestige projects in outer space, when there is hunger, disease and illiteracy on this planet where the human condition stands to be determined for good or ill? Is it our business to invade the moon or to save the earth for our common humanity?

(2) The advanced states and the international agencies should regard this problem as having a higher priority than it has hitherto enjoyed. If we cannot change the relationship between advanced and backward regions within two decades, the chances of a peaceful and ordered human society may be forever lost. By 2000 a world populated by 6,280 million people will not be able to endure the inequalities which now exist between states. The problem which has engaged the attention of this Conference should be solemnly considered by the heads of all governments interested in international development. The problem is not less urgent than those on which other "summit conferences" have been held.

(3) It follows also that the United Nations should regard this Conference as a beginning, not a climax. The President of the Conference should be invited to summarize our experience not only at the ECOSOC but also at the next session of the General Assembly. The decisions required from member governments are policy decisions. I think that the President, the Secretary-General, the Chairman of the Scientific Advisory Committee and the Vice-Presidents should meet before the next session of the General Assembly to formulate alternative proposals for machinery designed to associate the scientific community more closely with the progress of developing areas and with the work of the existing Specialized Agencies.

(4) Nothing of value can be achieved without the initiative of the governments of developing states. These governments must be given a deepened confidence in the modern scientific movement as one of their sources of their progress. The course open to them is clear:- Draw up a survey of resources; formulate a ten-year development plan; give the most urgent priority to human resources; establish an indigenous science through the training of a scientific élite; make maximal use of the U.N. Specialized Agencies, of bilateral agreements, and of the specialized assistance which is so patently available to governments seeking accelerated development.

Let us hope and believe that the leaders of new nations will approach the problems of development and technical progress with the same ardour and perseverance which they have hitherto devoted to the struggle for national liberation.

(5) While I advocate a full use of international machinery, I do not believe that the United Nations should claim a monopoly of initiative and responsibility. The communion between the world of science and the world of national liberation should be

sustained at every level. Individual states and scientific institutions should do what they can to stimulate the reciprocal flow of experience and knowledge. Bilateral programmes sometimes have an intimacy and speed which large international agencies cannot always achieve.

(6) Many of the new states have territories and populations too small to constitute viable units of development. Irrigation projects, universities and research institutes - except in such unusual conditions as those which affect my own country - require a broad demographic and territorial basis. There is a strong case for regional organization of planning and research, especially in Africa. It is not impossible to combine individual sovereignty with collective development.

(7) Future conferences held by the United Nations or in member states should be of more limited scope and should address themselves to clearly defined fields. Believing that soil and water are still the main source of life for millions in the awakening continents Israel proposes to hold a conference in 1963, bringing experts on agricultural planning and agrarian education together with ministers and officials of developing states concerned with these problems. I believe that similar specialized conferences could usefully consider problems of disease control, technical and scientific education, the use of new energies, initial industrialization and planning and survey techniques. The dialogue held here must be maintained and even intensified, but on an increasingly functional basis.

If we understand this Conference in its special context of history, we have no reason to be disappointed. We have been wisely led by our distinguished President, Professor Thacker, and ably organized by Secretary-General Dr. Chagas and his associates. There has never been such a concentration of scientific knowledge and responsibility in the service of humanity's submerged millions - those who have secured the outward form of liberty and now seek its inner content. There is evidence that the world's scientific conscience is being galvanized by the pathos and opportunity of the less developed regions. This is the first generation of mankind in which the elimination of poverty and disease has become objectively possible. Science is the father of this possibility. Scientists do not wish to retreat into their laboratories in an effort to escape the challenge of human anguish and human hope. They have the will and the capacity to transform the human situation.

If we can only fertilize their will and organize their capacity we may yet inaugurate one of the Great Ages of history.



20 February 1963

Original: English

UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

ADDRESS BY PROFESSOR ABDUS SALAM

Chief Scientific Adviser to the President of Pakistan
to the closing plenary session of the United Nations
Conference on the Application of Science and Technology

WORLD DEVELOPMENT : A CRISIS FOR SCIENCE

Mr. President, Your Excellencies, Ladies and Gentleman,

I am deeply conscious of the great honour you, Mr. President, have done me and my country by asking me to speak at this concluding plenary session. Even apart from its lasting impact on world affairs, this will remain a memorable conference for all those who attended it, firstly for its intense vitality coupled with refreshing plain speaking and secondly for the remarkable - truly remarkable - unanimity of development experience it has revealed. For its undoubted success, we all owe to you, Mr. President, to the Secretary-General and to his devoted secretariat the deepest debt of gratitude.

What have been the lessons of the Conference? Much of what I want to say has been highlighted by the distinguished delegates from France, USA, UAR, USSR and particularly Nigeria. For me the major lesson of the Conference is simply this: World development will come when the Scientist and the Technologist first begin truly to value their own potential. And when I say scientist and technologist let me be very clear. I do not mean only the distinguished representatives here, but also those outside this hall, those who constitute the whole body of science and technology. For far too long has the scientist lived in an ivory tower of his own creation. For far too long has he lived the captive life of the Djinn of Aladin's Lamp. He must change his own attitudes before he can ever hope to see the goal of world development fully realised.

Let me be more explicit. If there is one thing this Conference has focussed for all of us, it is this. For the under-developed world there is absolutely no short cut to prosperity. Science and technology are almost like magic potions but not - certainly not - in the tiny doses that we at present can afford.

In saying this, I am fully conscious that it might indeed have been otherwise. After all, within our own generation we have seen the miracle of the anti-biotic revolution. We have seen that science can conquer early death relatively inexpensively, that man can be made to linger longer if only to die eventually of starvation. It is perfectly possible that tomorrow may bring an inexpensive antidote to hunger but unfortunately our Conference did not hear any word of this.

Granted then, that we the scientists from the developing countries have been here to learn how best to equip ourselves for making the right choices, with the slender resources at our disposal, how likely is it that when we go back to our countries we shall actually be asked to exercise these choices? Let us make no mistake about it. With rare and refreshing exceptions, we are hardly the men who run the development and planning councils in our countries. At present this is the prerogative of our Civil Administrators - men who are the finest products of the culture of Arts, of the culture of Law, of the culture of War - but seldom if ever of the culture of Science. With unfortunate monotony this pattern repeats itself in Asia, in Africa, in Latin America. Quite often, the priorities are set, in practice by a distinguished scientist colleague from abroad; in Professor Garcia's eloquent phrase "by someone with the ability to speak Spanish with a foreign accent".

Why does the Scientist and the Technologist carry so little responsibility for development in his own country? I could blame it on the legacy of our past. I could blame it on the acquiescence of our colleagues from some of the richer countries in accepting this pattern in their own conditions. But mostly the fault is with ourselves that we are underlings. Our own attitudes have been too academic. We have hardly equipped ourselves to fight for and take responsibility. If

there is one thing this Conference has done, it has reawakened in us the resolve to fight and the willingness to accept all tasks of technological development.

Perhaps I am somewhat hard on some of the Scientists from the richer countries. Perhaps there are very good reasons why they should play no more than the advisory role of subordinate technicians, why they should not wish to shoulder eventual responsibility for development in their own countries. But when their acquiescence in the present scheme of things seriously affects the prospects of world development, we have a right to be terribly concerned. And unfortunately where this hurts most is in the provision of capital to acquire even those small but vital doses of the scientific and technological potion we so badly need.

To be quite blunt, whatever sacrifices we may make internally, there still is a quantum of capital we must depend on the developed world to provide. In this capital I include all reserves of skills and basic research. The decision whether or not such reserves will ever become available for world development is eventually a political and an administrative decision. But in campaigning for these resources, we do expect our scientific colleagues from the richer countries to be our greatest allies. For those same colleagues to turn round and tell us that no funds can be spared until general disarmament comes is the unkindest cut of all. Disarmament may be long in coming and quite candidly, I personally have the greatest fear that the funds presently going to armaments will never get directed towards the needs of the poorer countries - not unless we can all strive and fight for a fundamental change in world attitudes. After all, it is hardly the arms race which makes the richer countries exact the harsh subsidy of depressed commodity prices from us - a subsidy which Mr. Paul Hoffmann will be the first to tell you runs into billions of dollars and which currently washes away almost all moneys received in aid.

The cautious timidity of the scientist from the under-developed country towards responsibility, and the cautious timidity of our scientist colleagues from richer countries towards capital are, to my

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mind, only symptoms of the deeper malaise which afflicts science and scientists in both developing as well as developed parts of the world.

For me, the real crisis of human affairs lies in this. Almost unthinkingly the scientist and the technologist has created this modern world. By eliminating distance the scientist has given a meaning to the concept of one world and reality to the concept of a single human family. By demonstrating that unlimited wealth can be created provided a base for it exists, he has invested humanity with the power to clear up all the slums on this earth. He has created something whose promise, whose scale the non-scientific and sometimes even the scientific mind barely comprehends. But after doing all this he turns his back entrusting the task of world development to those who still live and think in terms of an age of scarcity. His personal ideal still remains that recluse at the Institute for Advanced Study. I do not know how relevant Plato's message in the Republic was to the conditions of his day. But its aptness to-day is beyond the slightest doubt. Plato said, "Until philosophers are kings or the kings and princes of this world have the spirit and power of philosophy, and political greatness and wisdom meet in one, and those commoner natures who pursue either to the exclusion of the other are compelled to stand aside, cities will never rest, nay nor the human race". This to my mind is the real message of this Conference.

There is really nothing new about this message. Just after Hiroshima, the physicist was the first to feel the impact of what Plato had said. In the Pugwash Conferences he has been trying to atone for this ever since. What we need first and foremost is the crusading, the fighting spirit of a new Pugwash for World Development among the Scientists and Technologists of the world.

I am quite clear in my mind what we from the developing countries must do as top priority. Not until all those who administer acquire the spirit of science, should we rest content. My colleagues from the developed world can help, not only by building anew the

international avenues of co-operation, but also much more in a personal way. If I may respectfully suggest so, come and make frequent visits to us to encounter our problems first hand. If you are a University dean, take one department in one university in one poor country as your personal problem. If you are an expert, make it your duty when you next visit us to find out if there is also a local expert. Very often you will find that the doors which readily open to you are all but shut to him. He perhaps gave the same advice you tender to-day, years ago. You may find he was never listened to. It is crucial to build him up. Science knows no frontiers; in world development it needs solidarity, it needs forging and fusing of newer and vital personal links. We have started doing this at the Conference. Let this movement gather strength, let its message reach every scientific worker in every land.

Nine hundred years ago the great physician of Islam, Al Asuli, writing in distant Bokhara divided his pharmacopoeia into two parts; "Diseases of the Rich" and "Diseases of the Poor". If Al Asuli were alive to-day and could write about the afflictions of mankind I am sure he would again plan to divide his pharmacopoeia into the same two parts. Half his treatise would speak of the one affliction of Rich Humanity - the psychosis of nuclear annihilation. The other half would be concerned with the one affliction of the Poor, their Hunger and near Starvation. In diagnosis he might perhaps add that the two afflictions spring from a common cause - the excess of science in one case and the lack of science in the other. I wish, in prognosis, he may not have to add that it is the faltering will of the scientist physician which needs building up much more than that of the patient.



UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

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ADDRESS BY DR. F. T. SAI (GHANA)

at the closing plenary session of the

UNITED NATIONS CONFERENCE ON SCIENCE AND TECHNOLOGY

Mr. President, Mr. Secretary-General, Your Excellencies, Ladies and Gentlemen, every so often the human race is called upon to take stock of itself, of its achievements and of its goals.

During this period of self evaluation mankind is able to come out with ideas which look excellent and receive universal acclaim. The old League of Nations in whose home we are to-day, arose out of such an evaluation. So did the United Nations under whose auspices we are met here to-day.

But whereas both of these great institutions arose out of a period of destruction, a period of upheaval and a situation of fear and near desperation, the present Conference has grown out of hope rather than fear. We have been looking at our world, at ourselves and at our future, and what have we seen?

We have seen that the two ends of the world's spectrum of wealth are very far apart. We have used the term developed and less developed to apply to these two ends and we have tried to discuss the causes of these differences. There are nations with a per capita income of \$50 or less whilst others enjoy \$1000 or more. These differences are not due to national laziness or apathy, they are not due to contentment with their poor lot on the one hand as opposed to initiative and hard work on the other. These are differences which have been brought about by cruel climatic and physical conditions and have been accentuated by the tremendous advance of science and technology.

For the past 2 and a half weeks Sir, we have been busy examining firstly the problems of the less developed areas in the light of current development all round the world. On some issues considerable amount of knowledge exists, on others, hardly any. It has been made abundantly clear that practically every area described as less developed has got some people - however small their numbers - who are aware of their problems and in some cases, have ideas on how to tackle them.

It is to the lasting credit and glory of this great Conference that this small band has been given a good hearing. The developed nations have listened to the problems of the developing and less developed areas and have together examined possible solutions. It has emerged quite clearly that the problem of education and training is the biggest single hindrance to progress in many of the countries we have been discussing -

that there is a need to tackle this on a scale never before envisaged at an international level. Even where general education has made strides, scientific and technological education and training have so lagged behind as to slow down the best programmes of development. The general shortage of technicians and technologists of all grades have been clearly demonstrated. Then the various vicious circles that hinder capital formation in the less developed areas and the consequently slow growth of the gross national product have been discussed.

However, throughout this Conference there has been a justifiable optimism. The general feeling is that the know-how is either already available or can be developed. Examples of countries which have bridged the gap quickly through mobilising the useful forces of science and technology have been put before us. In all these, however, the warning has been given that measures which have worked in one area need not work in another area, however superficially comparable. The complex ecology of man needs to be constantly studied. The reward is there.

Mr. President, mankind has been called upon to demonstrate its faith and confidence in itself, to accept the challenge that this is one world, that, however great the dangers of atomic destruction, there is the even greater danger of an unequal divided world that keeps on merely rolling along, some of its areas riddled with ignorance, poverty and disease. As a physician, I should like to ask what good it will do a mother to develop one half of a pair of Siamese twins and leave the other half. When the time of reckoning comes she is sure to lose both.

I have been encouraged to find that although mother nature has been selective in her feeding, the developed twin is now ready and willing to help the other half. This is the beautiful feeling I have got out of this Conference and this is why I am sure we from the less developed areas will go back home with renewed energy knowing that we have friends and brothers able and willing to back us up in this era of scientific and technological advance.

February 21: I had a poor sleep for such a long day ahead. I am up at 4:30 and do my final packing and eat a small breakfast in my room, supplemented by four charcoal tablets.

Jackson Rigney comes along in a US car and we go to the airport and check in. We are in the plane at 8:20 and in the air at 8:25. The wheels are down at Orly in the snow at 9:17 a.m.

I have a long wait here. Most of the others leave at noon on TWA.

Just as I am waiting to board the Pan Am flight, up comes Leo Anderson on his way from the Ivory Coast. We board at 12:50 and are told that we must stop at Shannon for gasoline because these runways are too slippery to risk a full load of fuel. We are in the air at 1:32 and down at Shannon about 2:50. I send Mommy a cable: "Some delay, wait home for call."

We are in the air out of Shannon at 3:25 p.m. or 9:25 a.m. New York time. How this day drags although Leo and I have some long chats which help a good deal.

The wheels are down in Idlewild at 4:52 and I am in the air station at 5:00 p.m. two hours late. I am told that I can go directly to Baltimore on Pan Am. A young

man agrees to change my ticket and my bag. He says I have 35 minutes to call Mommy that we will be in Baltimore within the hour. Several of us are taken in a bus to the Pan Am building but when we get there we are told that the hydraulic system is faulty and that the plane won't go for an hour or more!

I try to call Mommy but she has already left home. We are given a steak dinner and do board the plane at 6:55 but we set on the runway until 7:25 when we are finally off.

We are down at Baltimore at 8:18 and in the airport at 8:25 p.m.

Mommy is there, the bag comes, and we drive home once more after a long and tiresome trip.

Added later: In early April, 1963, I received copies of many additional newspaper clippings. These showed that most reporters were confused, were looking only for the dramatic, and cared little for agriculture. Many wrote that the Conference papers did not deal with the critical problems of the people. But these same reporters neglected the many papers that did just that. Many authors who were unacquainted with the people, villages, and problems of the newly developing countries, did fail to communicate; but those who did good jobs of dealing with the real situations of the country people in ways that could be understood, had too few dramatic phrases to interest the reporters. Political cracks, made on the spur of the moment, and grandiose schemes were featured. Certainly the Conference had failings. It deserved and got both criticism and praise, but for quite the wrong reasons.

1500 Delegates in Geneva

Hopes Die Aborning for Talks On Aid to Backward Areas

By Karel Norsky
Manchester Guardian

GENEVA—It will take some time to assess what the unique United Nations Conference on the Application of Science and Technology to underdeveloped nations (UNCAST) here has achieved. But at least one thing seems to be generally acknowledged by the more than 1500 departing delegates: there will never be such a comprehensive conference again.

Paul G. Hoffman, managing director of the United Nations Special Fund, told the closing session of the gathering, which began Feb. 4 with statements of high hope from around the world, that "it is the follow through that counts."

If this follow through takes the form of cool professional assessment by the governments concerned, the verdict is likely to be that just to rediscover the existence of science, technology and underdevelopment is not good enough in this decade of truly rising expectations.

Intricate Issue

Development has come to be recognized as an intricate issue involving political, social and economic advancement. It cannot be settled or even sensibly approached in a huge conference where experts and politicians from developed countries outnumber by four to one those from the back-

News Analysis

ward ones and where there are 16 subjects under simultaneous consideration.

Thus, the planned interchange of ideas and data between developed and underdeveloped nations did not work out at all.

The inflation of experts from developed countries proved not only self-defeating but also a little embarrassing.

A delegate from an underdeveloped country was something precious to be seen with. And even though the 22 per cent of delegates from underdeveloped countries accounted for 44 per cent of all speeches made, proper communication between the developed and developing delegates was never established.

In fact, clusters of developed experts could do little more than be available at some of Geneva's more pleasant spots.

In contrast, funds had not been made available for the journey and stay in Geneva for many experts from the undeveloped nations.

Much Not Understood

Most delegates from underdeveloped countries felt that a considerable volume of detailed knowledge, often entirely unintelligible to them, had been thrust at them to solve problems they often did not have. Meanwhile, real crucial problems were bypassed without ever having been discovered.

Many experts from developed countries complained about having been brought to Geneva to find that they had to talk to persons from

underdeveloped countries who did not have the background for a specialized discussion. Had it been politically possible, they said they would have left Geneva quite some time ago.

Only the organizers of this conference—which cost the United Nations and the participating governments about \$7 million—and their elaborate public relations staffs kept insisting that a revolution had in fact been born here in the minds of the developed scientists and technologists.

The scientists' dedication to the cause of development had been awakened in the same way as when they realized during the last war that they must devote their talents to harnessing the tools of victory, the public relations line asserted.

No New Machinery

There were strong tendencies to quickly set up new and complex international machinery simply because a problem was recognized. But these were checked.

What will happen is that the officers of UNCAST will report to the U. N. Economic and Social Council. Then an ad hoc panel of scientists, including some with a genuine knowledge of development, is likely to be set up to advise U. N. Secretary-General U Thant, who told the conference, in a message delivered by Hoffman, that the work of the whole U. N. family in science and technology "should be brought under continuing review so as to insure an interdisciplinary approach and a maximum of cooperation and coordination."

It should be noted that the repeated Soviet claim that development could be achieved within one generation once the Soviet system was adopted sounded so unreal at this unreal gathering that its impact got lost with everything else.

A senator reports on Geneva.

U.N. SCIENCE CONFERENCE IN GENEVA—STATE DEPARTMENT BOONDOGGLE

Mr. YOUNG of Ohio. Mr. President, I wish to utter very strong criticism of certain operations of the State Department. On January 31, the Vice President bestowed an honor upon me by appointing me to the United Nations Cultural and Scientific Technical Conference. As the statement appears in the CONGRESSIONAL RECORD, it reads:

The Chair appoints the Senator from Ohio [Mr. Young] to the United Nations Cultural and Scientific Technical Conference, to be held at Geneva, Switzerland, February 4 to 20, 1963.

I was very happy to learn that shortly thereafter the Vice President also appointed the distinguished junior Senator from Kansas, JAMES B. PEARSON, and that together we were to represent the Senate of the United States at that Conference.

Mr. President, despite the statement in the handout of the State Department that Senator Young is a member of the U.S. delegation to the U.N. Conference on the Application of Science and Technology for the benefit of less-developed areas, I make it crystal clear that such is not the fact. The Vice President designated my colleague and me to attend this Conference as observers.

As an observer, I report the lack of vision and adequate planning of State Department officials and the fact that this Conference caused many members of the U.S. delegation who are physicists and scientists of note in our country to waste their time in attendance at this gathering. No such conference should be permitted in the future until thorough groundwork has been laid in each emerging country by representatives of our excellent U.S. Information Agency, Foreign Service officials, and AID representatives already in those countries.

I feel that my colleague, Senator JAMES PEARSON, and I are in agreement that it is a good thing we were in Geneva at this Conference as observers.

I assert, Mr. President, that here is an example of futility and waste, with

American taxpayers footing 40 percent of the cost.

At the time we left Washington for Geneva, Switzerland, neither of us expected to remain there for the entire Conference. We did not feel free to absent ourselves from our duties in Washington for that length of time. However, we expected to serve our country at the Conference. We went there with the serious intent to render a real public service.

The Senator from Kansas [Mr. PEARSON] and I traveled by commercial airline. Frankly, Mr. President, I was surprised to note that the tickets furnished by the State Department to convey two U.S. Senators, representatives of the people, were for economy class. In 1956 and 1957, I traveled to Switzerland and other parts of Europe several times as a private citizen. As a private citizen, I traveled first class. It was with some surprise that I noted how travel arrangements had been made for two U.S. Senators by officials of the State Department.

Twenty years ago, I traveled to Europe for the first time. That voyage was in a military convoy, and the trip was some 20 days in duration. A couple of ships in the convoy were lost by reason of attacks by German submarines.

But that trip on the convoy was far more comfortable than the trip we two U.S. Senators took on the economy flight to Geneva. The Senator from Kansas is a somewhat larger man than I am—somewhat heavier above the neck, and certainly much heavier below the neck than I. Even I was very much crowded in. A lady who was on the plane held one of her children on her lap, and an older child occupied an adjoining seat. The little girl on her mother's lap perhaps was worrying about the Cuban situation and Castro, because she cried throughout the night. Mr. President, as if that were not enough, a boy who sat close to the Senator from Kansas and me constantly kicked the back of our seats. The weather was so bad that it was impossible to land in Paris, so the plane had to go to Frankfurt, instead. At Frankfurt, after waiting an hour or so at the airport, we started back to Paris to catch our connecting flight to Geneva. At Paris the weather was still so bad that it was impossible for the plane to land there; so we were flown to Rome. You see, Mr. President, the "wise" planners in the State Department had selected Geneva for the site of the Conference—Geneva, in January. They could scarcely have been thinking of what they were doing. That is the point I shall discuss in a moment. So, we waited at the Rome airport, and finally we were able to fly to Geneva.

At Geneva, we found that more than 100 Americans were attending the Conference. Unfortunately, many of them—and a number of them were fine university professors and noted scholars, making great sacrifices by being away from their important work at home—were utterly wasting their time by attending the Conference, which had not been competently conceived and arranged.

About 80 nations were represented at the Conference by approximately 1,200 delegates. The United States had about 100 delegates, and the Soviet Union had about 100. Ambassador Bingham, a very fine public official, observed—and I wish to stress this point—that the United States paid 40 percent of an annual fund, up to a total of \$150 million, raised for the benefit of the United Nations technical assistance program and the United Nations Special Fund.

Mr. President, today I am complaining that the State Department officials were lacking in vision and were lacking in good judgment. Perhaps in order to perpetuate some of their jobs in their huge bureaucracy, they called the Conference in Geneva, ostensibly for the purpose of helping the developing nations.

The distinguished Senator from Kansas and I attended every session which was held while we were there. Frankly, we became fed up with much that went on. We stayed there 4 full days. That was about all we could stand. We did not attend any of the parties given each night. We decided to take dinner by ourselves. We had had enough during the day.

At the Conference, speaker after speaker addressed the delegates. After listening to about 21 speeches, I lost count. I observed the delegates from the developing nations apparently listening, but I knew they could not grasp very much of what was being said. For instance, one speaker spoke about computers. I do not believe that any of the delegates from Tanganyika or Iraq were interested in that subject.

I immediately sensed that it was very largely a waste of time to hold a conference of that sort. Yet, it was held, at great expense to the American taxpayers.

Officials from the Agency for International Development were all over the place. Frank M. Coffin, the Deputy Administrator, was there. I am sure that he, too, felt he was wasting his time, when he could have been in Washington attending to his important duties here. Other representatives of the Agency for International Development participated in the Conference. I do not know whether or not they considered it a vacation.

At the Conference I became acquainted with a young man from Nigeria. I found that he and the delegates from Iraq and other countries—all of them—had traveled to the conference first class, and had round trip tickets, first class.

However, American taxpayers who footed the bill lost out on the return tickets for the delegates from Iraq. Those delegates—who listened to perhaps 20 or 30 speeches during 1 day's conference, and it is doubtful that they could assimilate any part of them—obviously were unable to use their return tickets. If they returned to their homeland, they would have been in great danger.

In talking with another young delegate, I complimented him on the fine suit of clothes he was wearing. I found that he had purchased the suit in Lon-

flects both the geography and the ideology of the members of the Democratic conference. That commitment was made in 1961. It was made again in 1963. It has not been carried out.

If it is determined not to seek an increase in the size of the steering committee, then there is another very simple way in which the same result can be achieved, and that is to have two of my fine southern friends resign from the committee, to permit in their place two additional Kennedy Democrats to be placed on the committee from either the Middle West—and certainly one of them should come from there—or from the Mountain or Western States, or from the Atlantic Seaboard States, which have so heavy a share of the population of the United States.

I certainly would not want to suggest who should resign, but with my tongue in cheek I would suggest that the fairest way might be to have the junior southern Senators on the committee resign. However, I say that in a somewhat lighter fashion, because I have no doubt that these gentlemen would decide this matter for themselves and would not welcome any particular advice from me.

I point out that both Senators from Florida are on that committee, and I suggest that is not a very equitable situation.

Therefore, my first recommendation would be to reconstitute the steering committee.

My second recommendation would be to increase the size of the Committee on Appropriations, the Finance Committee, and the Foreign Relations Committee, so that Senators passed over in committee assignments last week could get their just due, and so that the program of the President might get its fair and prompt attention.

My third recommendation would be that the Senate act promptly in considering the changes in the rules which I have just discussed.

CONCLUSIONS

Mr. President, why all this fuss? Why should I have taken the time of the Senate on 3 separate days to raise these matters? The first reason is that procedure is the heart of justice. Without just procedure, whether it be due process of law, enshrined in the 5th and 14th amendments to the Constitution, or whether it be the rules, customs, manners, and traditions of the Senate, procedure is the heart of justice. We are operating today under rules, procedures, customs, and traditions which are unjust, unfair, and undemocratic.

So while I sympathize with the majority leader when he suggests that we should get to the Senate business, I say there is no more important Senate business than assuring, at the beginning of a session, that the procedures of the Senate are just.

There appears on the Calendar Senate Resolution 9, which is supported by 56 Senators and is opposed by that Senate Establishment, bipartisan in nature, which refuses to allow the Senate to act on a matter of justice, of equity, of democracy, and of fairness, for which 56

of its Members plead. This problem will be on the conscience of the Senate until a vote is allowed on Senate Resolution 9.

Again and again during this session, those 56 Senators will call to the attention of the southern bloc and of their Republican colleagues that "There, on your consciences as Senators of the United States, lies the heavy charge that you will not permit the Senate to act on a resolution of importance to its internal government, to its fairness, to its justice, when a clear majority of the Senate, 56 out of 100, have put themselves on the record by their votes and by their pairs to change this rule."

Mr. President, Carthage must be destroyed. There must be a vote on Senate Resolution 9. There is no justice, there is no equity in forbidding a vote because of the outmoded method of unlimited debate. So the principal reason for all this fuss is, as I say, that procedure is the heart of justice.

Another reason, in all candor, is that the Senate has no legislative business to transact. Why should we not discuss questions of procedure until measures of legislative importance, on which we can act, are on the calendar? The only important item on the calendar today is Senate Resolution 9; and that is the only legislative business which the Senate establishment does not want us to dispose of. It is not we—the Kennedy men, the liberals, the independent and forward-looking Republicans—who are holding up the conduct of Senate business; it is the Senate establishment which will not let us vote on the only measure of any importance which is on the calendar, and which is ready for action.

So I close, as I began, with the plea to my colleagues to make a beginning in the modernization of the Senate and its procedures; to make a beginning in the elimination of control by a small group of bipartisan Senators, fine persons, I say at the end, as I said when I began—friends of mine they have been in the past, friends of mine I hope they will continue to be in the future—who are committed to the status quo, who seem to be committed to sectional rule; who, with all due deference, I suggest—and I do defer to those fine and honorable Senators—have an unawareness of the modern world and of the dangers confronting us from a resourceful antagonist overseas, whose government is able to act in an instant; an unawareness of the danger that our Government will not be able to act in a crisis because the Senate of the United States has rendered itself, by its ancient, archaic, and obsolete rules unable to act when its majority is ready for action.

In the end, the Republic is in jeopardy. Perhaps not today, perhaps not tomorrow, but who knows when? It is later than we think. The Senate should bring itself up to the needs and the challenges of the seventh decade of the twentieth century.

Mr. President, I yield the floor.

Mr. EDMONDSON. Mr. President, while I had anticipated my first statement on the Senate floor would be a

eulogy to the late Kerr, the great and homan whom I surmise if I did not remarks made here cent committee ass

I refer, Mr. President, to the division between the di majority leader, the tana [Mr. MANSFIELD], in which it I was "lassoed" by the tee of the Senate to culture and Forest

The steering committee a Member of the Senate happy to be wearing important committee state this with both cation.

First of all, as know, Senator Kerr honor as chairman mittee on Aeronautics and as rank the Finance and Politics. As his successor carry on his work in Oklahoma and for the opportunity of mittees on which he I requested assignments mittees.

As you know, Mr. ing committee chosen Committees on Aeronautics and Agriculture. I respect their judgment with gratitude.

There are numerous was pleased to be a of these committees these being that be mer chairmen two est citizens. They Kerr, who served Space Committee death last January Thomas, who served Agriculture Committee the 1940's.

But, Mr. President, there is another reason why the junior Senators welcomes assignments Committee at this time.

In dollars and cents, agriculture suffers in Oklahoma. People employed in agriculture in any other industry farmers and ranch leaders in the promotion of beef cattle and quantity of the out but two of the items for which Oklahoma. The young people in the FFA have won every national in their field.

Moreover, the Oklahoma, like his predecessor, is interested to become in cattle operation—more modest business Kerr.

don. I wondered whether some of my constituents in Ohio would appreciate learning that they had done considerable sweating to pay for our foreign assistance program which enabled that young man to buy that suit of clothes from a London tailor. He traveled first class. He paid little attention to the speeches. He probably could not understand most of those he heard. After I had been there for 3 days I made a statement. I said that the State Department had handled the arrangements without any vision whatever. I have traveled throughout every Central American country. I have spent 26 days on a study mission in South America. I have been in the Far East. I knew that we had AID and Foreign Service personnel all over the world. The State Department should have instructed these people to lay the necessary groundwork for delegates to an extremely technical conference of this kind. We should have followed the example of Canada. I give credit to our neighbors in Canada. Using commonsense and being practical, they had motion pictures there. My colleague and I were fed up with listening to repetitious speeches. It seemed that one after another, the delegates from the United Kingdom and the United States would speak. Then there would follow delegate after delegate from the emerging nations. There was much confusion; and it was a great relief to see the enlightening and educational motion pictures presented by the Canadian delegation. One could learn from them.

I stated that the Vice President of the United States had paid me a great honor. I had come there in high hope that I could render a service. I know that my colleague the Senator from Kansas [Mr. PEARSON] felt the same way at the outset. Both of us were disgusted. I am sorry that the Senator from Kansas is engaged elsewhere and cannot be present at this time. I hope that he will be present on a future occasion when I may advert to the same subject and pay my respects to the State Department's mishandling of this project, because I feel that the Senator shares my views. Otherwise he and I would have stayed longer than the 5 days and 4 nights that we remained there.

It cannot be claimed that the taxpayers paid out an exorbitant amount for our expenses, because we were limited to an expenditure of \$15 a day. We are not complaining about that.

I said, "Look at the abominable weather outside." Instead of sending people from all over the world to Geneva in midwinter, the State Department could have arranged initial conferences in each country for nationals of that nation. Our AID personnel already in those countries could have been present to act as advisers. No additional outlay of taxpayers' money would have been necessary. We could have had a gathering of 200, 300, or 400 young men and women meet first in their own countries with our AID technicians already stationed there acting as advisers. Motion pictures could have been shown to them, illustrating the scientific developments

and technical advances that we are making in this country.

After showing them these pictures and thoroughly discussing the complex subjects involved, then perhaps our people in those countries could suggest some of the delegates that should be sent from these emerging countries.

I said, "We have relatives of the ruling people of such countries as Chad, Mauritania, and other new nations. They traveled here largely at the American taxpayers' expense first class. What of any real value has been accomplished?"

What did I read in the handout from the State Department? Five hundred copies of this largely false statement were sent to my office, as if I would be so foolish as to distribute them to members of the press or anyone else. I object to that handout because it misrepresented the statement I made. It stated:

Senator STEPHEN M. YOUNG, of Ohio, proposed that the United States employ roving teams of technical and information experts to help developing nations make the most of challenging, large-scale, international conferences.

I made no such suggestion. That would be furthest from my thoughts.

I have been a supporter of the mutual security program of the Eisenhower administration. I am thankful that in the Kennedy administration we truthfully call it a foreign assistance program. However, Mr. President, the junior Senator from Ohio is fed up with having the taxpayers of his State sweat and toil and produce and produce, while we are throwing away billions of dollars of foreign assistance, so called.

As I have stated in Geneva and other places, I state here and now that I believe we can truly cut 20 percent from the proposals for fiscal 1964 and save \$1 billion of the taxpayers' money on foreign assistance without harming the program in any way. We can leave it to the administrators to apply the cuts.

I do not want more bureaucrats feeding at the public trough as is suggested in this State Department handout. In my statement I referred to American officials already working abroad in our foreign assistance program, and there are too many of them as it is. We ought to remove some of the bureaucrats in the State Department and in the AID program from the public trough and let them come back to the United States and engage in gainful employment here.

Attending the conference were fine technical experts who are leaders in their professions. Many are leading scientists in the United States. I am sure that if they would speak out as I am speaking out today—and as I may speak out on an occasion next week on the same subject—it would be found that they are equally disgusted with having wasted their time in Geneva. I am sure officials of the State Department had such fine men and women sent over there as delegates with high hopes that they could really be helpful to some emerging nations. How mistaken they were. I am very much afraid that our State Department also furnished them economy-class tickets. At the same

time the State Department of the United States is indirectly furnishing 40 percent of the money for the delegates from Nigeria, Chad, Tanganyika, Sierra Leone, and many other countries.

As an example, I talked with a young man from Sierra Leone. I was curious. I asked him how he traveled. He said, "I came here first-class commercial airlines. I am going back first class." I asked, "Are you getting much out of this?" He answered, "I am attending parties in the evenings and listening to a few of the speeches. Did you see the moving pictures of the Canadians? They were very good." I replied, "Yes; that is the only good thing about this conference I have seen to date."

Mr. President, I wished to be brief and to the point, and I have not been. However, I resent the fact that some public relations man, as I suppose they call him in the State Department issued this release. He probably failed to make a good living, or perhaps was fired, as a reporter for some newspaper.

Included in the handout was, "Senator Young Attends the U.N. Science Conference in Geneva." That is one of the very few truthful statements in this handout that the State Department issued.

I resent that handout. I want you, Mr. President, to know that the junior Senator from Ohio can, every now and then, experience some difficulties which he himself gets into. However, he resents someone else putting exactly the opposite meaning to statements he makes.

Mr. President, I know that the USIA is a fine Agency of our Government. Under its Director, Ed Murrow, it has helped and is continuing to help our prestige greatly throughout the world.

What I said at Geneva is what I wish to leave with the Senate today. Instead of spending taxpayers' money on conferences that bring no result whatever, such as this conference—which was a stupid and utter waste of the taxpayers' money by officials of our State Department—we should properly utilize USIA facilities, pictures and services, and our Foreign Service people in the capitals of Africa, Central and South America, and the Far East. Then, we could really accomplish something for the emerging nations.

I see that this release quotes me as saying, "Senator Young said, 'I sense the challenge of the times. It is obvious that America, with its abundance of scientific and technological talent, its pioneering spirit and its unsurpassed energy, must direct its efforts more fully on the home ground.'"

That is what I did say. For once they quoted me accurately. We must first orient these people and instruct them so they can send qualified, competent delegates to international conferences.

I did say that there is a great deal of groundwork that must be accomplished in the developing nations, and I made it a point to talk with the delegates.

I even talked with a man named Dr. Federov, the leader of the Soviet dele-

gation. He spoke English very well. He expressed surprise that the U.S. Senate was represented by two Senators. After I had been there a couple of days I expressed to my colleague surprise that we were foolish enough to have come. But at that time I spoke up to this fellow, Dr. Federov, and said, "Well, in the United States the people of the United States rule, and the Congress of the United States is made up of representatives of the people, and we are here to help the emerging nations of the world."

That was sophomoric talk, really, but I believed it at the time. That was early in the session. Afterwards I saw the utter futility and, lack of planning, and I cannot blame Dr. Federov for his expression of surprise.

I do not mean to be facetious about this at all. It is a very serious matter to have the money of our taxpayers wasted in such a futile meeting as one of this sort. I am certain that if anyone would interview my distinguished colleague, the junior Senator from Kansas [Mr. PEARSON] he would express a similar view. It would have been a matter of pleasure on our part to have traveled there and back economy class had anything been accomplished. But nothing was accomplished by our being there.

I repudiate, Mr. President, this statement made by the State Department attributing to me views opposite to those which I hold. I would shudder to think that following this conference we would place on the public payroll some roving teams of technical and information expert, so called, in addition to those already in the State Department, who have demonstrated such ineptitude in their failure to properly plan this Conference and in their failure to conduct it in a worthwhile manner.

I yield the floor.

THE SENATE ESTABLISHMENT

Mr. DOUGLAS. Mr. President, while I have been listening to the Senator from Pennsylvania [Mr. CLARK] for the past 3 days, and have been studying his remarks in the CONGRESSIONAL RECORD each morning closely, I have been debating with myself whether I should seek recognition from the Presiding Officer to discuss the points which he has brought out.

I am well aware that to speak on this subject is not popular; that it does not advance one in the assignment of positions; and that it tends to be resented by many who occupy influential positions in the Senate and in the country.

Nevertheless, I felt that it was my duty to indicate that the Senator from Pennsylvania did not stand alone in what he said, and that some indication should be given, through the CONGRESSIONAL RECORD, that there are some—and I believe many—of us who believe in the basic positions which he has been advancing.

Let me say at the very beginning that I have no personal complaints to make so far as my own treatment is concerned. I am a member of two important committees, the Banking and Currency Com-

mittee, of which I have been a member ever since I first came to the Senate more than 14 years ago, and the Finance Committee, which I tried to get on for a number of years and had some difficulty in making, but to which I was finally assigned. I am also a member of the Joint Economic Committee.

So I want to make it clear that I have absolutely no complaint about the way I have been assigned to committees, nor have I any complaint whatsoever about the way I have been treated by those who hold different opinions from mine on public policy. Furthermore, I have no animus toward those who are in control of the party senatorial policy. I do not question their motives. I think they are conscientious, according to their lights, and that they have in many ways estimable qualities which deserve recognition.

Nevertheless, the Senator from Pennsylvania has put his finger on one of the weaknesses of our party and one of the weaknesses of the Senate.

The Democratic Party wins its presidential elections by the votes of the great industrial States. It wins those elections on platforms which are believed in by the voters and which pledge to carry out legislative programs which will be in the interest of the great masses of the American people; namely, the wage earners, the small farmers, the white-collar workers, the small businessmen, the housewives, and the consumers. That is how we win our presidential elections. Then the Congress convenes, and we are not able to pass any considerable portion of the program upon which we have gone to the country, and we find that the machinery of the Senate, and I think largely of the House, is in the hands of those who fundamentally do not believe in the program by which the presidential election was won and for which the great mass of voters in the country cast their ballots.

We all know this to be a fact. No one can be around this body for 2 or 3 years—indeed, less than that—without knowing it to be the case. No one can be around here for any space of time without knowing that the combination against such a program operates from both sides of the aisle; that what we have is really a bipartisan alliance, a coalition which is basically opposed to the platform of the Democratic Party.

Many of us have been reading the book "The Deadlock of Democracy" by James Burns, in which I think he correctly states that there are four parties. Even though I think his classification is not precisely accurate, there are four parties. There are the liberal and progressive Democrats, the conservative Democrats, the conservative Republicans, and the liberal Republicans—a small but gallant band. The two center groups, conservative Democrats and conservative Republicans, work in very close alliance with each other, dominate the major committees, control the procedures of the Senate, and in the main stymie the legislation for which the presidential candidate of the Democratic Party has gone to the country.

There is no use, to my mind, in denying these facts, but apparently it is regarded as bad form to call attention to them. I am reminded of the story in Hans Christian Andersen's "Fairy Tales," about the emperor who had a suit of clothes supposedly woven for him which was in reality nonexistent. He paraded in this suit of clothes. Others were expected to admire the suit of clothes. Finally, a very naive boy said, "The emperor has no clothes." Then the illusion was punctured and the people saw the king in his full nakedness. The reluctance of some to discuss the facts of the organization of the Senate is similar to the reluctance to admit that the emperor had no clothes.

Consider the committee chairmanships. Of 14 major chairmen, 10 come from the Southern States, 2 from the Southwestern States, and 2 from States in other parts of the country.

I refer to the bipartisan coalition—I suppose the Senator from Pennsylvania would call it the senatorial establishment—and its followers. I suppose the author of "The Citadel" would call it the club. They mean the same thing and largely refer to the same persons. They control the Senate.

I personally believe the result of permitting the coalition's dominance to continue has been that we have not moved forward in the field of legislation as rapidly as we should have done. I also feel, as a Democrat, that it is of increasing disadvantage to the party in making an appeal to the country, because people are properly saying, "You campaign on these platforms, but you do not or cannot put them into effect when we elect you."

Therefore, the bipartisan alliance, which really carries out the Republican platform, operates against Democratic senatorial and congressional candidates from the North and the West, operates against our presidential candidate, and is indeed an albatross around the neck of the Democratic Party.

Yet we are not supposed to talk about it because we might offend someone or might indicate that matters are decided in a different way from the way they are discussed in public. In short, we should not call attention to the nakedness of the emperor.

However, I happen to be one who believes that the truth in these matters is extremely important and that to recognize the facts is the first step toward cure. We all know it is so in the field of medicine. Diagnosis comes first; cure comes second. As long as one denies he is ill, as long as he believes everything is fine, he will not take steps to cure the situation. Not until evidence piles up, crippling symptoms appear, and real sickness develops are corrective measures adopted.

As I explained the other day, I was put on the steering committee, to my surprise, only 5 minutes before I had to go to Illinois. I left my proxy with the Senator from Pennsylvania. He cast that proxy for me in a manner which would increase the strength of the section of the Democratic Party which be-

AN EVALUATION OF THE UNITED NATIONS CONFERENCE ON THE APPLICATION OF SCIENCE AND TECHNOLOGY FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

By

Ralph W. Phillips

The Conference was held in Geneva from 4 to 20 February 1963. It represented a substantial expenditure in money, time and effort by the nations and organizations which participated, and by the United Nations which undertook the organization and servicing of it. Reactions to it varied from deep skepticism regarding its possible benefits, to substantial optimism. There were, no doubt, good reasons in support of both these extreme views and for the views of many that were intermediate. The object of this "evaluation" is to set down some of the facts and problems, as they appeared to one who served as Scientific Secretary for the largest single sector of the Conference, i.e., Agriculture. It does not attempt to cover the problems of the Conference, as they might be evaluated by a participating delegation.

General

Perhaps the three major adverse criticisms aimed at the Conference by participants were that it was too broad in scope, that too few of the people it was designed to help were in attendance, and that it was too much dominated by political considerations.

From within, and certainly not so evident to those coming to the Conference from the outside, there were other serious adverse criticisms relating to the almost complete lack of flexibility given to the Scientific Secretariat to plan and develop a well-balanced program, to the quite inadequate liaison and co-operation between the U.N. Administration and the Scientific Secretariat, and to the failure in other ways to use the Scientific Secretariat effectively. These latter difficulties arose in part directly from the strong political overtones to which reference has already been made, and in part perhaps indirectly from the same cause, in that the Administration of the U.N. carried out its work in a way designed to meet its views of the needs of political conferences and without any regard to the very different nature of scientific discussions.

On the positive side, it may be said that the very substantial degree of success actually achieved by the Conference is attributable primarily to the generally good quality of the papers contributed by governments and organizations, to the careful preparations made by the Scientific Secretariat, and to the fact that the scientists who participated brought with them a climate in which it was possible to carry on scientific discussions.

Scope of the Conference

On this score, there are arguments on both sides. On the one hand, a series of smaller conferences on limited subjects probably would have attracted greater numbers of participants specialized in the respective fields and would no doubt have permitted greater depth of discussion. On the other hand, the breadth of subject matter covered in the Conference gave a basis for looking at the whole of science and how it might be applied in less developed areas, rather than to dig deeply into the detailed developments and possible applications in any particular field.

During the course of the Conference, the attitudes of participants appeared to shift gradually from the former to the latter view, and much emphasis was given by speakers in the closing plenary to the value of such an overall look at science and technology.

Participation by Less Developed Countries

Apart from the general lack of funds in the less developed countries for the sending of delegations to international conferences, it is difficult to determine the reasons why relatively few participants came from many of these countries. As was indicated above, more total people might have been sent to a series of specialized conferences than to a single large conference.

Perhaps, also, the procedures for submitting abstracts and papers were not only overly complicated, but perhaps not fully understood and could not be coped with in many of the less developed countries. As a consequence, many who might otherwise have had a "legitimate claim" on travel funds could not secure authorization to travel since they had no place in the Conference program.

Domination by Political Considerations

Three kinds of political factors, each of a very different sort, dominated the preparations for the Conference and to some degree the Conference itself.

First, there was the basic conflict between East and West; the effort by each side to get its best foot forward, to demonstrate that its political/social system had the most to offer, and to show that it was in position to really be most helpful to the less developed countries.

Second, there was the effort by certain countries whose empires were fading to recoup as much prestige as possible through an active role in the Conference, and to demonstrate how their long experience and achievements could be helpful to less developed countries.

Third, there was the effort on the parts of the less developed countries to use the Conference as a basis for securing greater assistance from the developed countries, particularly through international channels.

The first of these was by far the most troublesome. The second took on more the nature of "nuisance value" in certain cases, particularly during the preparatory period. The third, while directly related to the objectives of the Conference, unfortunately became centered around a campaign for a new "science agency" without many of the promoters being aware of the nature, functions and scope of activities of existing international agencies, or of how such a new agency might relate to existing agencies. This initiative was pretty well discredited by the end of the Conference. Thus, for purposes of this "evaluation", the problems of political domination arose primarily from the East-West controversy. This political domination took many forms.

Political considerations affected the work of the Conference in a number of ways, including the basis upon which "space" in the Conference program was allocated to countries, the manner in which contributions were selected, the handling of contributions within the Secretariat particularly to avoid overlap of subject matter between sessions, and the organization of sessions themselves, including the designation of Conference officers. Some observations on these various factors are given below.

Allocation of "Space" to Contributing Governments

The term "space" is used since the information supplied to governments specified that the "limit will be in the region of a total from all contributors of 12,500 manuscript pages of approximately 500 words each", and that the number of papers submitted by any one contributor "should not exceed in total the equivalent of 1,250 manuscript pages, including tables, graphs, photographs, etc.". The first of these decisions was based primarily on budgetary considerations; the second apparently was aimed at keeping any one of the big powers from getting too much space in the program.

The effect of the latter decision was twofold. Instead of keeping the contributions down to about 500 papers of 25 pages each, as was originally envisaged, most governments divided their "allotment" among many short papers rather than a few comprehensive ones; or, even if governments proposed long papers, the Secretariat was forced to impose severe limitations on length. In consequence, the Secretariat had to build a program based on many small contributions, often very limited in scope. It was argued by some that the Secretariat should have been more rigorous in its culling of papers. However, the "allocation" of space, and of the basic responsibility for selection of materials to be presented, left the Secretariat very little flexibility in this regard. Governments, on the one hand, were insistent upon getting as many places as possible on the program. The Secretariat, on the other hand, had to build with small bricks, and, in Agriculture, for example, the 516 papers finally contributed left many gaps in subject matter coverage.

The second effect of the 1,250 page space allotment was to lead many governments to submit proposals up to this total, when in fact the full quota could have been filled by only ten governments. This encouraged further the submission of many short papers, and enhanced the Secretariat's problem of "building with small bricks".

Selection of Contributions

Reference is made above to one of the major problems of selecting contributions from which to build a sound, well-balanced program, i.e., using many short and often highly specialized papers. In addition, the Scientific Secretariat was under constant pressure to maintain "balance" between East and West, and between developed and less developed areas; these pressures seldom took into account scientific content and merit. On occasion, decisions were taken without reference to the Scientific Secretariat, but as bows to pressure applied by governments. Thus, while Scientific Secretaries had some small flexibility in the selection of papers, the area was indeed narrow and circumscribed.

A little additional flexibility was provided by allowing for the invitation of papers to fill gaps. However, this too was limited; for the whole field of Agriculture, for example, only five such invitational papers were allowed.

Co-ordination of Programming

Co-ordination within the Secretariat left much to be desired. This arose in part from the way the Agenda had been set out, and in part from political considerations, which were of two sorts.

Two major areas of overlap in the Agenda, in-so-far as Agriculture was concerned, were: (a) the assignment of "Products of Animal and Vegetable Origin" to Industry, while within this subject, papers on "Pulp and Paper" overlapped with "Forest Extraction and Forest Industries" in Agriculture, and "Fats, Oils, Resins and Co-Products" and "Leather and Tanning" overlapped with "Processing Agricultural Products", also in Agriculture; (b) the assignment of "Food Preservation and Processing" to Industry, even though the same kinds of subject matter were also covered under "Processing Agricultural Produce" in Agriculture. All attempts to co-ordinate, either by transfer of papers or by organizing joint sessions, were vetoed by the U.N. Administration, apparently to avoid any political problems that might arise because the Scientific Secretaries for Agriculture and Industry were, respectively, from the United States and the U.S.S.R.

It should be added that the overlap in Agenda Items between "Pulp and Paper" and "Forest Industries" arose in part because the Industry portion of the Agenda was based on U.N. proposals, and the Agriculture portion on FAO proposals, and the overlap was not sorted out at the outset by the Scientific Advisory Panel. The same is also true of the overlap between Agriculture and Industry Agenda items relating to processing of food and other agricultural products.

Still another example of an inter-organization political problem related to the section under Agriculture on "Improvement in Levels of Nutrition" (with sub-headings on "Nutrition and Public Health Policies" and "General Nutritional Problems") and the overall section on Health and Nutrition. Actually, the Health and Nutrition section had no sub-item relating to the public health aspects of nutrition, and no papers in this field. This was so because the representative of WHO in the initial planning stage, and the designee of that Organization in the Scientific Secretariat, wished to preserve as much space as possible for material on public health policy. Also, in the Agriculture sector, governments did not submit materials relating directly to public health policies. However, owing to pressure from WHO, the section "C.2 - Improvement in Levels of Nutrition", was finally listed in the program as a "joint" session between Agriculture and Health and Nutrition, although no contributions to "Health and Nutrition - Section F" were considered therein.

Organization of Sessions

The selection of chairmen, rapporteurs and discussion leaders for the various Specialized Sessions was done on a "by lot" basis, to achieve "proper geographic distribution". Fortunately, many governments were in position to

designate as chairmen, men who were competent either as chairmen or in their subject-matter fields, or both. Also, many governments supplied rapporteurs and discussion leaders who were competent both in their fields and to do the tasks required in the Conference. Other governments did not, however, and as a consequence, some sessions were inadequately chaired, some rapporteurs' reports were prepared by men who did not know or understand the subjects well, and some discussion leaders did not lead.

Rapporteurs. The Rapporteurs were in fact supernumeraries, a bow to political expediency. It was first thought that duties of the Secretary of each session and that of Rapporteur would be taken care of by one man. This, however, raised the political question of geographic distribution of faces at the head tables. The Secretaries had to be competent in their subjects. Also, in Agriculture, for example, where the Secretaries were supplied by FAO, and where the most of the Eastern countries are not members, it was not possible to achieve both the political/geographic distribution desired by the U.N., and the necessary competence in all individuals. Hence, it was decided to treat the Secretaries as members of the Secretariat, and to appoint Rapporteurs from governmental delegations to meet the political need. Rapporteurs reports, as such, were transmitted to the President of the Conference, and as such served to keep him informed. Otherwise, this placed a considerable drain on Conference Secretariat time, when that time was urgently needed, particularly by the Secretaries of Specialized Sessions, to prepare solid and detailed summaries for use in preparing the final Conference proceedings.

Discussion Leaders. To some degree the device of having Discussion Leaders proved hardly more useful than the device of having Rapporteurs. The idea itself was sound, but since it was implemented on a political basis, only a part of the Discussion Leaders really functioned as such. Even with coaching and advice from the Secretariat, many of them talked to their own papers, or to some limited subject of their own choosing, and did not cover a broad phase of the subject or subjects before the respective Sessions. As they spoke for 10 to 15 minutes each, those who followed their own chosen lines had more than their fair share of time (most speakers had to be limited to five minutes), which could have been put to better use.

Secretaries of Specialized Sessions. On the other side of the coin, the arrangements, finally arrived at after long and difficult negotiations (most of the difficulties being with the U.N. Administration rather than with FAO), whereby staff members from FAO served as Secretaries of Specialized Sessions, made it possible to handle the actual Agricultural work of the Conference with a minimum of political interference. The same appeared to be generally true of most other sectors where it was feasible to secure experienced international civil servants to carry out these duties.

The Secretaries of Agricultural Sessions carried out five major functions: (a) preparation of the Conference Secretary-General's Reports for the respective Sessions, these summaries of the subject-matter being circulated in advance of the Conference; (b) presentation of introductory statements, to initiate the discussion, based on the Conference Secretary-General's

Reports; (c) Serving as Secretary during the respective Sessions; (d) Assisting the Rapporteurs as required in the preparation of their reports, and submitting supplemental reports to the Conference President where necessary; and (e) preparing final summations of their respective Sessions, based on the Conference Secretary-General's Report, the discussion, and pertinent material from papers not adequately covered in the Conference Secretary-General's Reports. This series of procedures made it possible to achieve much more balanced final summations than otherwise would have been possible.

As has already been pointed out, the method of inviting and selecting papers was such that there was not adequate coverage of the subjects on the Agenda. The Conference Secretary-General's Reports, therefore, to a considerable degree filled in gaps and became to this extent additional contributions to the Conference. These broad reviews, plus the papers, plus the discussion, then added up to reasonable coverage of most subjects. For Agriculture, the summations, based on these three sources, constitute the only adequate record of the proceedings. Information available to the writer indicates that such a summation was not prepared for any section other than Agriculture, a point to which reference is made later.

Lack of Co-ordination Between Major Sectors of the Agenda

Owing to lack of adequate Scientific and Administrative leadership, to which reference is made in the next section, there was little opportunity for co-operation and "cross-fertilization" among the major subject-matter sectors of the Agenda. One example of this lack has already been cited in connection with the discussion of "Co-ordination of Programming". There were some exchanges of papers between sectors, in order to place these papers where they seemed to fit best, and in a few cases joint sessions were arranged, but for the most part the efforts in this direction were stymied by the impossibility of organizing meaningful discussions of such problems. Staff meetings, held rather frequently at the outset, were usually without any agenda and without positive leadership from the chair. Consequently, they usually led to confusion and lack of decision. In the last several months before the Conference, the Scientific Secretariat was brought together only twice, and then only to receive instructions.

With so large a Conference on widely divergent sciences and technologies and with so little prior selection of the written contributions, it was perhaps too much to expect a close co-ordination of the subject-matter. But, had the whole operation been less "Balkanized", more could have been done to assign papers to the most appropriate session and to adjust the sessions to provide the best coverage. The tight program did not allow many joint sessions but there were a large number of informal meetings, some of which served the same purpose and might have been more fully reported. It remains to be seen whether the published proceedings will succeed in bringing together those loose ends without sacrificing the identity of the specialties which go to make up science and technology. It is significant that so little had been decided about final publication before the Conference met.

Preparation of Material for Published Proceedings

Regarding published proceedings, decisions had been taken prior to the Conference: (a) not to re-publish the contributed papers, which had been circulated as separates in advance of the Conference; (b) to issue 6, 7 or 8 volumes treating the subject matter of the Conference; and (c) to have these volumes prepared by a group of professional writers.

The Scientific Secretariat was not consulted regarding plans for publication, nor was it asked to prepare material therefor. It was apparently assumed--in fact it was so stated on one occasion by a senior U.N. official--that scientists could not write and that the job would be done by professional writers. A group of such writers was in fact recruited, and began its work about the time the Conference began, and a couple of weeks earlier in the case of two individuals. These writers are expected, after having listened to the discussions, to prepare the proceedings of the Conference.

The Scientific Secretariat for Agriculture, however, prepared an approximately 300-page (single spaced) "Summation of the Papers and Discussions" and made it available to the editors. No single person, whether agriculturist or professional writer, would have had the subject-matter competence to do this job alone. It was a group effort formally involving 19 persons, and, informally, quite a few others, all highly knowledgeable in their respective fields. So far as is known, no other sector of the Scientific Secretariat made any such effort. The effort of the Agricultural Secretariat was welcomed, once finished and presented, but prior to this the effort was in fact discouraged and was carried out without official blessing. It is difficult to conceive of the lack of comprehension of the task of reporting a scientific conference, and the lack of administrative forethought, which permitted a Scientific Secretariat to dissolve before work on all sectors had been brought to the stage of a technically and scientifically sound summation of the work of the Conference in the respective fields.

Lack of Co-ordination Between Scientific and Administrative Secretariats

To a considerable degree, difficulties encountered by the Scientific Secretariat in planning a well-balanced program, and in co-ordinating their efforts, arose from a sharp dichotomy between the Administrative Secretariat and the Scientific Secretariat, and from the lack of a strong, full-time high command.

Even though there was a dichotomy of functions, the Administration sometimes interfered in scientific matters. Much more often, however, procedures were established and arrangements made which materially affected the work on the scientific side, without those having responsibility for that work being given any opportunity to make suggestions. Thus, for example, arrangements were made even for the handling of Conference sessions about which the Scientific Secretariat was unaware until the weekend just before the Conference opened on Monday.

The Scientific Advisory Panel

This body, which was established subordinate to the Scientific Advisory Committee, might have been expected to provide the scientific balance wheel in the planning and preparatory period. Instead, it served primarily as a political forum where East and West sparred for position, and dealt with scientific matters hardly at all. Even when scientific subject matter came up for consideration, it was disposed of primarily in the light of political considerations.

Consequently, the Panel, which could have done much to ensure sound scientific preparations, generally added to the Scientific Secretariat's problems in this regard.

Conclusion

If any single conclusion can be said to arise from the foregoing, it is that the United Nations--which is by its very nature (and quite properly so) a political body, dealing with political matters--is not a suitable body under which to organize scientific conferences and similar activities.

Perhaps this became more evident in the Conference on Science and Technology than in other smaller, more limited conferences such as the one dealing with new sources of energy, both because: (a) it introduced the broad problem of assistance to the less developed areas, which of itself has political overtones; and (b) it was to a considerable degree being used as a public front-piece for the U.N. Development Decade, which, like the problem of technical assistance, has its own political overtones.

Thus, unless the governments constituting the United Nations are prepared to establish a quasi-independent Scientific Secretariat for such a Conference, and to ensure reasonable freedom to that Secretariat to plan and carry through, the end result is apt to be "political science" rather than "science and technology".

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